Heft 207 Band XXXIII Mai – Juni 2014

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A compilation of some fascinating open problems in the Proof Game genre

Nicolas Dupont, Forest Sur Marque

Proof game ideas developed intensively during the last two decades, and specialists now have a good idea of what is possible or unreasonable to expect. The aim of this article is to select not yet composed problems which are appealingly simple to understand and standing, in my judgment, at the frontier of what is feasible.

This list of open problems is certainly not complete, but hopefully precise enough to give an accurate feel for what is ultimate, so to speak, in proof game composition. For each challenge, I will quote existing problems that nearly solve it or show a closely related theme.

Several experienced composers helped me to achieve this project – many thanks to all of them for their advice. I also thank Thomas Brand, bernd ellinghoven and Hans Gruber for kindly accepting this article for publication in *feenschach*, as well as Mark Kirtley for his support with the English language.

Ceriani-Frolkin

Remember that a Ceriani-Frolkin piece is a promoted one, captured during the solution – probably the most illustrated theme in the Proof Game genre. This first section is devoted to open problems involving this theme only, focusing on promotion combinations showing an appealing homogeneity by either being all of the same type, or all different from each other.

Thematic pieces are all of the same type.

No problem showing 6 thematic pieces of the same type exists. The best candidate is certainly the Bishop, as it is the only piece for which both the (side-to-side) distributions (5+0) and (4+1) have been done (problems **1** and **2** respectively). This leads to the first 2 challenges in this section:

Open problems 01 and 02: Six Ceriani-Frolkin Bishops with distribution (4+2) or (3+3) respectively.

I doubt that a (6+0) distribution is possible, and a (5+1) distribution is less interesting because of being badly balanced. I also doubt that 6 Queens, Rooks, or Knights are possible – Queens and Rooks play in general at least 2 moves before being captured, and Knights have too reduced mobility.

For 5 thematic pieces of the same type, a rendition exists except for Knights (problems **3** for Queens, **4** for Rooks and **5** for Bishops, respectively). The next 2 challenges are therefore as follows:

Open problems 03 and 04: Five Ceriani-Frolkin Knights with distribution (5+0) or (3+2) respectively.

It seems there are better chances for success in the (3+2) case, but the (5+0) case would be an even more fascinating achievement. The remaining possibility (4+1) is less interesting for the same reason I mentioned above in the (5+1) Bishops case.

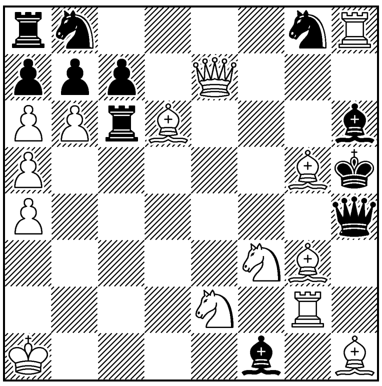
Thematic pieces are all of different types.

In that case we obtain what is called a (full or partial) AUW. The only known 6-fold Ceriani-Frolkin combination (problem **6**) shows a (3+3) distribution with the same partial AUW for each side. Modifying this distribution with almost the same content is the aim of the last challenge for this section:

Open problem 05: Full Ceriani-Frolkin AUW for one side and half Ceriani-Frolkin AUW for the other side.

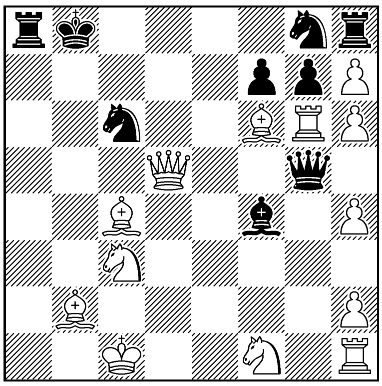
The 1-sided Ceriani-Frolkin full AUW was named "Les Mousquetaires" by Michel Caillaud, the first composer to have constructed it, and is maybe the most emblematic content in the Proof Game genre. The goal of the above open problem is thus to add 2 new Mousquetaires for the other side.

1
Unto Heinonen
R006 Probleemblad 1997
Dedicated to Olli Heimo



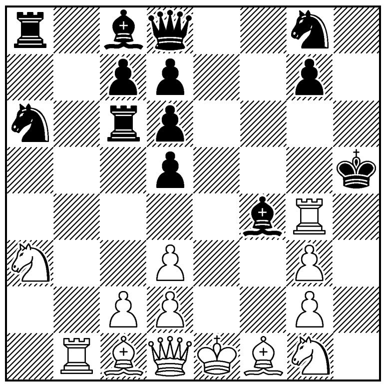
PG in 39.5 moves C+ 14+11

2
Dimitri Pronkin
Andrey Frolkin
5212 Die Schwalbe 1985



PG in 32.0 moves C+ 13+9

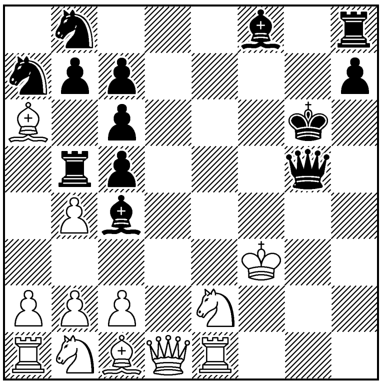
3
Unto Heinonen
7644v Die Schwalbe 1992
Dedicated to Andrey Frolkin



PG in 26.5 moves C+ 13+13

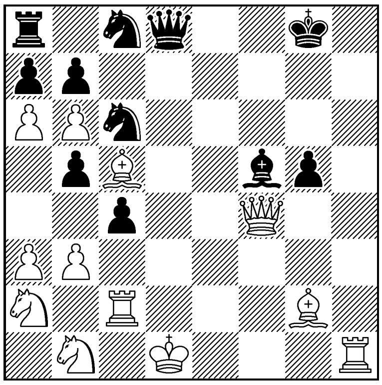
(1) 1.a4 h5 2.a5 h4 3.a6 h3 4.Ra5 h×g2 5.h4 Rh6 6.h5 Rc6 7.h6 g5 8.h7 g4 9.Rg5 f5 10.h8=B f4 11.Be5 f3 12.Rh8 f×e2 13.f4 g3 14.Sf3 g1=B 15.Bg2 Bb6 16.Bh1 g2 17.f5 g1=B 18.f6 Bgc5 19.d4 d5 20.d×c5 Bh3 21.c×b6 Bf1 22.Rg2 Kf7 23.Bg3 Kg6 24.f7 Bh6 25.f8=B e5 26.Bd6 Qh4 27.Bg5 e4 28.Kd2 e1=B+ 29.Kc1 Ba5 30.Sc3 e3 31.Kb1 e2 32.Ka1 e1=B 33.Qe2 d4 34.Qe7 d3 35.Se2 Beb4 36.c3 d2 37.c×b4 d1=B 38.b×a5 Ba4 39.b3 Kh5 40.b×a4. **(2)** 1.a4 d5 2.a5 d4 3.a6 d3 4.a×b7 d×c2 5.d4 a5 6.d5 a4 7.d6 a3 8.Qd5 a×b2 9.Sd2 b1=B 10.Bb2 c1=B 11.Ra6 Bg6 12.e4 Bcf5 13.e×f5 c5 14.f×g6 c4 15.g×h7 c3 16.Bc4 c2 17.Sf1 Bh6 18.Se2 c1=B 19.Sc3 Bcg5 20.f4 e5 21.f×g5 e4 22.g×h6 Qg5 23.d7+ Kd8 24.Rg6 Sc6 25.b8=B e3 26.Bf4 e2 27.Kd2 e1=B+ 28.Kc1 Bh4 29.g3 Bd6 30.g×h4 Kc7 31.d8=B+ Kb8 32.Bf6 B×f4+. **(3)** 1.a4 h5 2.a5 Rh6 3.a6 Rc6 4.a×b7 a5 5.f4 Sa6 6.b8=Q a4 7.Qb4 a3 8.Qd6 a2 9.Sa3 e×d6 10.Rb1 a1=Q 11.b4 Qc3 12.b5 Qg3+ 13.h×g3 Be7 14.Rh4 Bg5 15.Rg4 h4 16.b6 h3 17.b7 h2 18.b8=Q h1=Q 19.Qb3 Qh7 20.Qe6+ f×e6 21.f5 Kf7 22.f6 Kg6 23.f7 Kh5 24.f8=Q Qd3 25.Qf3 Bf4 26.Qd5+ e×d5 27.e×d3.

4
Nicolas Dupont
15807 Die Schwalbe 2013
Dedicated to Silvio Baier



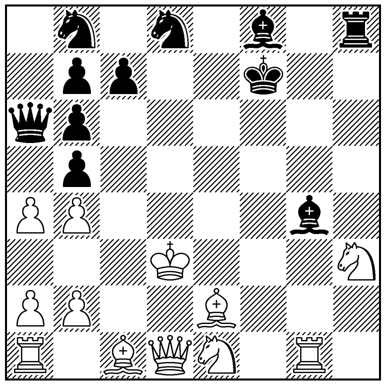
PG in 27.5 moves C+ 12+13

5
Dimitri Pronkin
503v Europe Echecs 1988



PG in 31.0 moves C+ 12+11

6
Michel Caillaud
593 Europe Echecs 1994
Dedicated to Andrey Frolkin and Gerd Wilts



PG in 32.5 moves C+ 12+11

(4) 1.f4 g5 2.f5 g4 3.f6 g3 4.f×e7 g×h2 5.g4 f5 6.g5 f4 7.g6 f3 8.g7 Kf7 9.e8=R Qg5 10.Re6 Se7 11.Rb6 a×b6 12.e4 Ra5 13.Ba6 f2+ 14.Ke2 f1=R 15.g8=R Rf3 16.Rg6 Rc3 17.d×c3 Sec6 18.Kf3 Sa7 19.Rc6 d×c6 20.Se2 Kg6 21.Re1 h1=R 22.e5 Rh4 23.e6 Rb4 24.e7 Be6 25.e8=R Bc4 26.Re5 Rab5 27.Rc5 b×c5 28.c×b4. **(5)** 1.b3 h5 2.Ba3 h4 3.Qc1 h3 4.Kd1 h×g2 5.h4 e5 6.h5 e4 7.h6 e3 8.h7 e×f2 9.e4 f5 10.Se2 g1=B 11.Bg2 f1=B 12.e5 Bb6 13.d4 Bfc5 14.d×c5 f4 15.c×b6 f3 16.Qf4 f2 17.Sc1 Ba6 18.Bc5 f1=B 19.a3 Bfb5 20.c4 Se7 21.c×b5 Rg8 22.h×g8=B g5 23.Bc4 d5 24.b×a6 Bf5 25.e6 Sc8 26.e7 Kf7 27.e8=B+ Kg8 28.Beb5 c6 29.Ra2 c×b5 30.Rc2 Sc6 31.Sa2 d×c4+. **(6)** 1.h4 e5 2.h5 e4 3.h6 e3 4.h×g7 h5 5.g4 h4 6.g5 h3 7.g6 h2 8.Sh3 Sh6 9.Rg1 h1=Q 10.g8=S Qc6 11.Se7 Qc3 12.Sc6 d×c6 13.g7 Bg4 14.g8=Q f5 15.Qb3 Qdd3 16.Qb6 a×b6 17.d×c3 Ra4 18.Sd2 Qa6 19.Sf3 e×f2+ 20.Kd2 Sf7 21.e4 Sd8 22.Be2 f1=R 23.Se1 Rf4 24.e5 Rfb4 25.e6 f4 26.e7 Kf7 27.e8=R f3 28.Re5 f2 29.Rb5 f1=S+ 30.Kd3 Sd2 31.c×b4 Sb3 32.c×b3 c×b5 33.b×a4.

Specialized Ceriani-Frolkin

The Ceriani-Frolkin theme is so popular that 3 composers each invented a very interesting specialization. The subject of this section is to present some related open problems.

Prentos pieces.

Remember that a Prentos promoted piece is one that is captured by an Officer (not by a Pawn). Several 3-fold combinations have already been reached and I don't know of a case not composed that would be considered a deep challenge. But I'm not aware of any 4-fold achievement, which is therefore the aim of the first challenge in this subsection:

Open problem 06: Four Prentos pieces.

Of course such an achievement would be even more fascinating if it showed a (4+0) or (2+2) distribution with good homogeneity. The ultimate rendition would be a full AUW (1-sided or 2-sided) but I don't think it is reachable. Nevertheless an interesting possibility consists in a partial achievement – the combination "2 standard Ceriani-Frolkin + 2 Prentos" exists both in the 1-sided case (problem **7**) and in the 2-sided case (problem **8**), although those combinations are not AUW. The remaining challenges of this subsection are therefore as follows:

Open problems 07 and 08: One-sided or two-sided full Ceriani-Frolkin AUW respectively, where one half are Prentos pieces.

Schnoebelen pieces.

Remember that a Schnoebelen promoted piece is one which is captured without having moved. A Schnoebelen piece is thus a particular case of a Prentos piece, but more difficult to construct. In particular I don't think that the above questions in the Prentos setting would allow a solution in the Schnoebelen one. For example, to my best knowledge, no full Ceriani-Frolkin AUW (1-sided or 2-sided) exists, where any piece performs the Schnoebelen theme. Nevertheless a 1-sided 3/4 Schnoebelen AUW exists (problem **9**), which is in fact a full 1-sided Schnoebelen AUW, as a Schnoebelen Queen is impossible to construct in the orthodox setting.

3 Schnoebelen pieces of the same type (the other very homogeneous possibility) has been done in the 2-sided setting (problem **10**) but not in the 1-sided. Hence the first challenge in this subsection is as follows:

Open problem 09: Three Schnoebelen pieces, all of them of the same type and color.

It is unclear what piece offers the best chance of success. Although the Rook has allowed a 2-sided achievement, only one move by the King is necessary to specify 2 promoted Bishops or Knights. For example, with 2 promoted pieces on c8 and g8, d8 and f8 unoccupied, the move Ke8-e7 makes sure that the 2 promoted pieces are Bishops, if the King is not moving out of check from those pieces.

The other challenge in this subsection is to relax the above open problem 06 to the Schnoebelen setting:

Open problem 10: Two Schnoebelen pieces together with two (standard) Ceriani-Frolkin pieces.

Of course, to be a full success, a rendition should also present some kind of homogeneity, e.g. all thematic pieces being of the same type. There is an example whose thematic content is close to both open problems 09 and 10, as it shows 2 Schnoebelen Knights and 1 Ceriani-Frolkin Knight by the same side (problem **11**).

Captured Donati pieces.

Remember that a Donati promoted piece is one which leaves and then returns to its promotion square. The difficulty in constructing a captured Donati piece is at least as great as for a Schnoebelen one, in particular no example exists for any 3-fold captured Donati pieces. Nevertheless it seems manageable, and is thus the aim of the first challenge in this subsection:

Open problem 11: Three captured Donati pieces.

As in the Prentos case, best achievements imply homogeneous construction (all pieces of the same type, or forming a 3/4 AUW).

The following two quoted problems are, to the best of my knowledge, the results closest to achieving the above challenge. Problem **12** shows 2 thematic Bishops where also an original Bishop is captured on the thematic promotion square. Problem **13** shows 1/2 thematic AUW with a tempo move by a thematic piece.

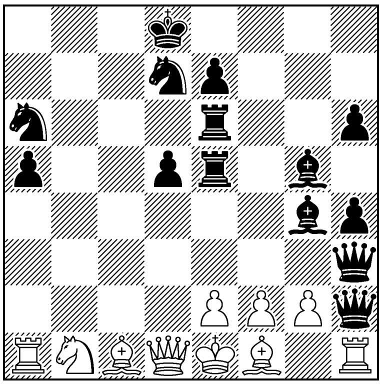
Open problem 10 makes sense analogously in the Donati setting, leading to the final challenge of this subsection:

Open problem 12: Two Donati captured pieces together with two (standard) Ceriani-Frolkin pieces.

Of course the remark concerning homogeneity remains valid. Note that it has already been mentioned that this task is solved in the Prentos setting.

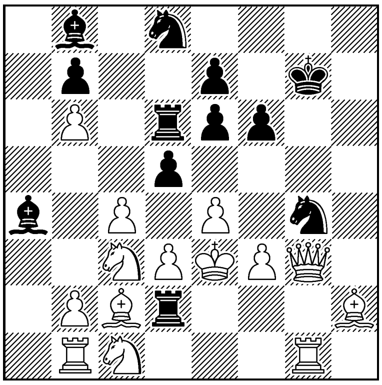
(7) 1.d4 h5 2.d5 h4 3.d6 Rh5 4.d×c7 d5 5.a4 Qd7 6.a5 Qh3 7.a6 Bg4 8.a×b7 a5 9.c8=B Ra6 10.Be6 R×e6 11.b4 Sa6 12.b8=B f5 13.Bg3 f4 14.b5 f×g3 15.b6 g×h2 16.b7 h×g1=Q 17.b8=B Qgh2 18.Bbf4 Rhe5 19.Bh6 g×h6 20.c4 Bg7 21.c5 Bf6 22.c6 Bg5 23.c7 Sf6 24.c8=B Kd8 25.Bd7 S×d7. **(8)** 1.a4 c6 2.a5 Qb6 3.a×b6 a5 4.h4 a4 5.h5 a3 6.h6 a2 7.h×g7 h5 8.e4 h4 9.Bd3 h3 10.Se2 h2 11.Rg1 h1=S 12.g4 Rh2 13.g5 Sh6 14.g8=B Bg7 15.g6 Be5 16.g7 f6 17.Bd5 c×d5 18.g8=B Kf8 19.Be6 d×e6 20.c4 Bd7 21.Sbc3 Ba4 22.Rb1 a1=S 23.f3 Sc2+ 24.B×c2 Sc6 25.d3 Rd8 26.Bf4 Bb8 27.Kd2 Rd6 28.Ke3 Sd8 29.Sc1 Rd2 30.Bh2 Sg3 31.Qe1 Kg7 32.Q×g3+ Sg4+. **(9)** 1.b4 g6 2.b5 Bh6 3.b6 Bf4 4.b×a7 h6 5.a×b8=R Ra5 6.d4 Rh5 7.d5 b5 8.d6 Bb7 9.d×c7 Bc6 10.c8=S Qb6 11.a4 Bc7 12.f4 d6 13.f5 Kd7 14.f×g6 f5 15.a5 Sf6 16.a6 R×c8 17.a7 Bd8 18.a8=B Kc7 19.Ra7+ K×b8 20.Rb7+ K×a8.

7
Silvio Baier
FIDE World Cup 2011



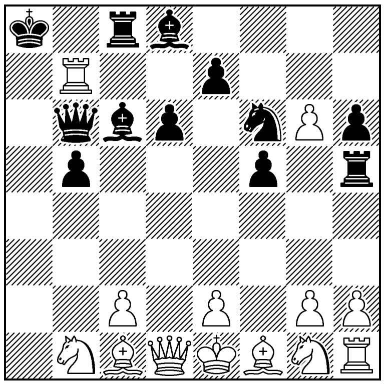
PG in 25.0 moves C+ 10+14

8
Jorge Lois
Roberto Osorio
Nicolas Dupont JT50 2013



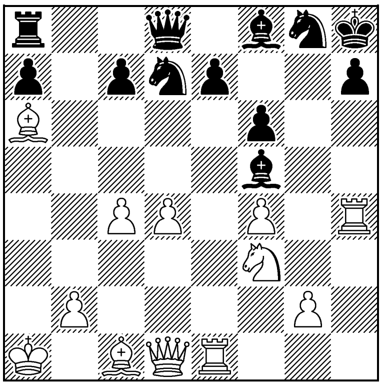
PG in 32.0 moves C+ 14+12

9
Gerd Wilts
14635 Die Schwalbe 2010



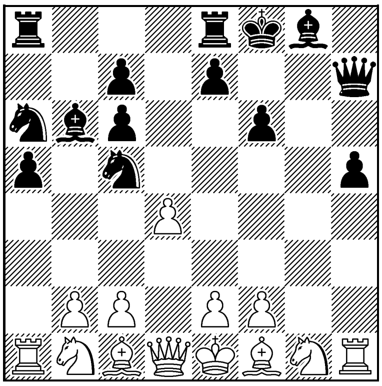
PG in 20.0 moves C+ 13+12

10
Unto Heinonen
P0151 StrateGems 2004



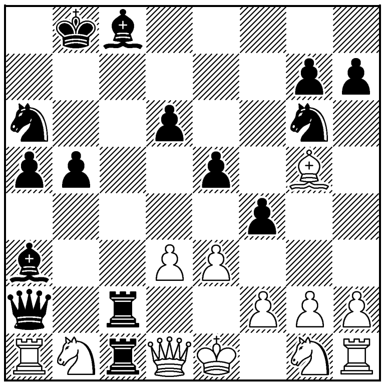
PG in 20.0 moves C+ 12+12

11
Kostas Prentos
Version Silvio Baier
13636v Die Schwalbe 2010



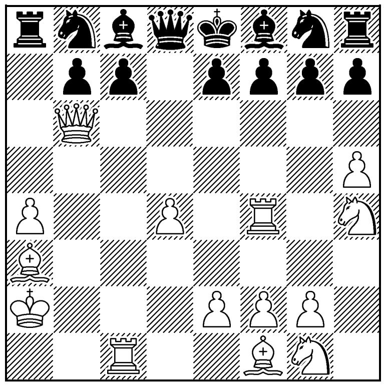
PG in 20.0 moves C+ 13+14

12
Michel Caillaud
Reto Aschwanden
StrateGems 2003
Gianni Donati JT50



PG in 20.0 moves C? 12+15

13
Reto Aschwanden
R44 Problemesis 2001



PG in 15.5 moves C+ 14+14

(10) 1.h4 b5 2.h5 b4 3.h6 b3 4.h×g7 b×a2 5.g×h8=R a×b1=R 6.Ra4 d5 7.Rah4 d4 8.f4 d3 9.Sf3 d×e2 10.d4 f6 11.Kd2 e1=R 12.Ba6 Kf7 13.c4 Kg7 14.Kc2 K×h8 15.K×b1 Bf5+ 16.Ka1 Sd7 17.R×e1. **(11)** 1.h4 Sf6 2.h5 Se4 3.h6 f6 4.h×g7 h5 5.g8=S Bh6 6.g4 Be3 7.g5 Bb6 8.g6 Sc5 9.g7 Kf7 10.a4 Q×g8 11.a5 Qh7 12.a6 Re8 13.a×b7 a5 14.g8=S Sba6 15.b8=S Kf8 16.Sc6 d×c6 17.d3 Be6 18.d4 B×g8. **(12)** 1.b4 e5 2.b5 Se7 3.b6 Sg6 4.b×c7 b5 5.c4 Bb7 6.c8=B Qa5 7.c5 Q×a2 8.c6 Ba3 9.c7 d6 10.Bh3 a5 11.c8=B Sa6 12.Bcg4 f5 13.d3 0-0-0 14.Bg5 Kb8 15.e3 f4 16.Bc8 R×c8 17.Be2 Rc1 18.Bc8 Rh×c8 19.Bg4 R8c2 20.Bc8 B×c8. **(13)** 1.h4 d5 2.h5 d4 3.Rh4 d3 4.Rf4 d×c2 5.d4 a5 6.Sd2 a4 7.Sdf3 a3 8.Sh4 a×b2 9.a4 b1=S 10.Ba3 c1=B 11.Qb3 Be3 12.Qb6 Sd2 13.0-0-0 Sb1+ 14.K×b1 Bd2 15.Ka2 Bc1 16.R×c1.

Anti-Pronkin

Remember that an anti-Pronkin is an original piece which stands, at a moment of the solution, on the promotion square of a Ceriani-Frolkin piece of the same type and color. Note that this definition allows the possibility for 2 anti-Pronkin pieces to share the same “supporting” Ceriani-Frolkin piece.

In particular, as noticed by the judge Silvio Baier, problem **14** actually shows a 3-fold anti-Pronkin combination (r,r,b).

This rendition is the only known 1-sided 3-fold achievement. It is far from 3/4 of AUW, which nevertheless seems manageable, although very complicated. This is the aim of the first challenge in this section:

Open problem 13: Three anti-Pronkin pieces forming 3/4 of one-sided AUW.

Of course the other very homogeneous combination (with 3 pieces of the same type) is impossible to construct in the 1-sided case, but probably feasible in the 2-sided one, thus leading to the following challenge:

Open problem 14: Three anti-Pronkin pieces of the same type, with (2+1) distribution.

As already mentioned, those 2 tasks have already been solved in the Schnoebelen setting – an indication that anti-Pronkin might be a more complicated theme than Schnoebelen.

Andrey Frolkin and I recently achieved something close to open problem 13, using a new approach: cyclic anti-Pronkin – the promotion squares are not visited by similar pieces but with cyclic shift (problem **15**). We also performed the (2+1) non-homogeneous combination (r,r,B), where the Bishop admits a second supporting Ceriani-Frolkin piece (problem **16**).

A rather strange fact is that the 2-sided Ceriani-Frolkin AUW where one half is anti-Pronkin, has been recently fulfilled (problem **17**), although an analogous version with Schnoebelen instead of anti-Pronkin is still unknown. The 1-sided case is the subject of a new challenge:

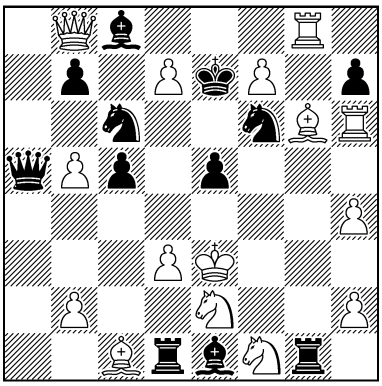
Open problem 15: One-sided Ceriani-Frolkin AUW, where one half is anti-Pronkin.

Finally, it is natural to look at specialized Ceriani-Frolkin pieces which might be extended to anti-Pronkin. Problem **18** shows 2 anti-Pronkin Bishops, both captured, with supporting Prentos pieces. The very recent problem **19** shows 2 anti-Pronkin Bishops, one of them captured, with supporting Schnoebelen pieces. The subject of the last challenge in this section is obviously to find an analogous content for the last specialization:

Open problem 16: Two anti-Pronkin pieces, where the supporting Ceriani-Frolkin pieces are Donati.

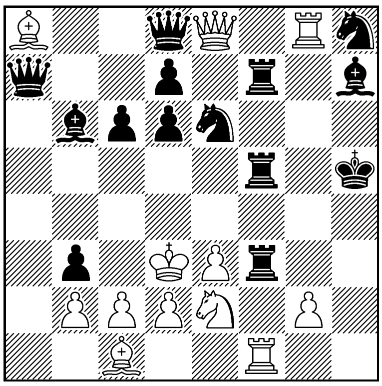
Maybe the correct way to handle this task is to work with 2 Rooks, where only one supporting Ceriani-Frolkin piece is needed.

14
Nicolas Dupont
FIDE World Cup 2013



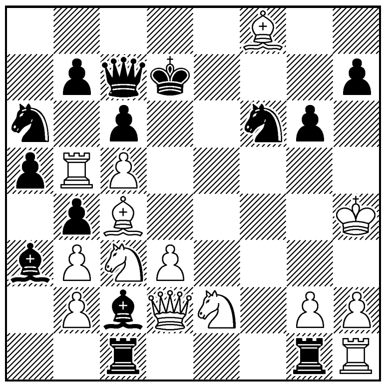
PG in 27.0 moves C? 15+12

15
Nicolas Dupont
Andrey Frolkin
R467 The Problemist 2014



PG in 35.0 moves C? 12+14

16
Nicolas Dupont
Andrey Frolkin
P0371 StrateGems 2014

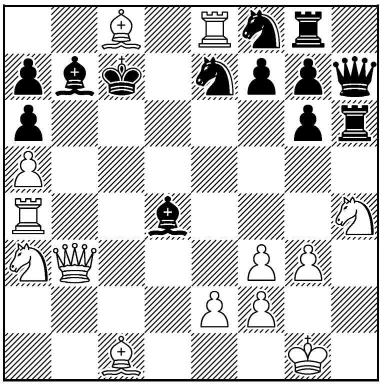


PG in 27.0 moves C? 14+14

(14) 1.c4 f5 2.Qa4 f4 3.Q×a7 f3 4.a4 f×e2 5.f4 g5 6.Kf2 e1=B+ 7.Ke3 Bh4 8.g3 g4 9.g×h4 g3 10.Bd3 g2 11.Se2 g1=R 12.f5 Rg5 13.f6 Rb5 14.a×b5 e5 15.Ra6 Bb4 16.f7+ Ke7 17.Rh6 Sf6 18.c5 Rg8 19.c6

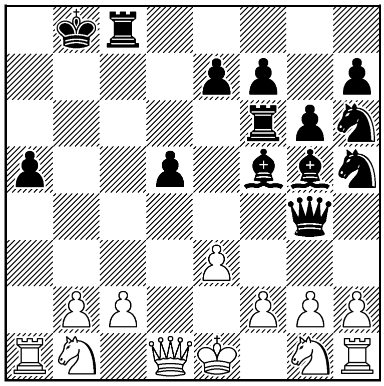
Rg1 20.c×d7 Rd1 21.Rg1 c5 22.Rg8 Sc6 23.Qb8 Ra4 24.Bg6 Qa5 25.d3 Be1 26.Sd2 Rg4 27.Sf1 Rg1. **(15)** 1.f4 a5 2.f5 a4 3.f6 Ra5 4.f×e7 f5 5.h4 Kf7 6.e8=R f4 7.Re6 Se7 8.Rc6 b×c6 9.h5 Ba6 10.h6 Bd3 11.h×g7 h5 12.Sc3 Bh7 13.g8=B+ Kg6 14.Bb3 a×b3 15.a4 Rf5 16.a5 h4 17.a6 h3 18.a7 h2 19.a8=Q h×g1=Q 20.Qa3 Qa7 21.e3 Sa6 22.Qf3 Sc5 23.Qe4 f3 24.Ba6 f2+ 25.Ke2 f1=R 26.Bb7 Rf3 27.Rf1 Kh5 28.Ba8 Sg6 29.Qe8 Se6 30.Kd3 Bc5 31.Se2 Bb6 32.Qd6 Rhf8 33.Ra4 R8f7 34.Rg4 Sh8 35.Rg8 c×d6. **(16)** 1.e4 c6 2.e5 Qc7 3.e6 Kd8 4.e×f7 e5 5.f4 e4 6.Kf2 e3+ 7.Kg3 e2 8.Kh4 e1=R 9.f5 Re3 10.f6 Rb3 11.a×b3 g6 12.Ra5 Ba3 13.Rb5 a5 14.f8=B Sa6 15.f7 Sf6 16.Bb4 Re8 17.f8=B Re1 18.Bfc5 d6 19.c4 d×c5 20.Sc3 c×b4 21.c5 Bf5 22.Bc4 Bc2 23.d3 Kd7 24.Bh6 Rae8 25.Qd2 Rc1 26.Bf8 Ree1 27.Sge2 Rg1.

17
Andrey Frolkin
Nicolas Dupont
P0373 StrateGems 2014



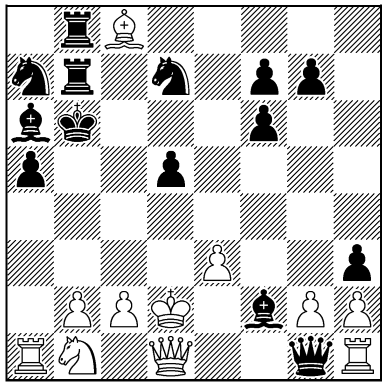
PG in 28.5 moves C+ 13+13

18
Roberto Osorio
Jorge Lois
Nicolas Dupont
After Reto Aschwanden
15121 Die Schwalbe 2012



PG in 17.0 moves C+ 12+14

19
Michel Caillaud
15673 Die Schwalbe 2013



PG in 21.0 moves C+ 11+14

(17) 1.d4 c5 2.d5 c4 3.d6 c3 4.d×e7 c×b2 5.c4 d5 6.c5 d4 7.c6 d3 8.c7 Kd7 9.e8=R Bc5 10.Re6 Se7 11.Rb6 b×a6 12.a4 Bb7 13.c8=B+ Kc7 14.Bf5 Sd7 15.Bg6 h×g6 16.a5 Rh6 17.Ra4 Qh8 18.Sa3 b1=S 19.Sf3 Sd2 20.Sh4 Sf3+ 21.g×f3 Rg8 22.Bh3 Sf8 23.0-0 d2 24.Qb3 d1=Q 25.Bc8 Qd6 26.Rd1 Qg3+ 27.h×g3 Qh7 28.Rd8 Bd4 29.Re8. **(18)** 1.d4 g6 2.d5 Bh6 3.d6 Bg5 4.d×c7 d5 5.a4 Qd7 6.a5 Qg4 7.a6 Bf5 8.c8=B Sh6 9.Bd7+ S×d7 10.a×b7 Sf6 11.b8=B Sh5 12.Bd6 0-0-0 13.Bcf4 R×d6 14.e3 Rf6 15.Bb8 a5 16.Ba6+ K×b8 17.Bc8 R×c8. **(19)** 1.d4 h5 2.d5 h4 3.d6 h3 4.d×c7 d5 5.a4 Kd7 6.a5 Kc6 7.a6 Sd7 8.a×b7 a5 9.b8=B Ba6 10.c8=B Qb6 11.f4 Q×g1 12.f5 Kb6 13.f6 e×f6 14.Bcf4 Bc5 15.Kd2 Bf2 16.e3 Se7 17.Bb5 S×c8 18.Bc6 Sa7 19.Bb7 Rh×b8 20.Bc8 Rb7 21.Bb8 Ra×b8.

Pronkin

Remember that a Pronkin piece is a promoted one reaching the home-square of a captured original piece of the same type and color. This is probably the most illustrated Proof Game theme just after Ceriani-Frolkin.

Ordinary Pronkin combinations.

Each interesting 3-fold Pronkin combination has been constructed, the toughest one being obviously (S,S,S), see problem **20**. Concerning 1-sided 4-fold Pronkin combinations, almost each interesting (i.e. very homogeneous) possibility is known, in particular the AUW case (problem **21**), and the 4-fold Queen rendition (problem **22**). I'm fully convinced that the same content is impossible for Knights, and almost sure it is also impossible for Bishops. This leaves the first challenge in this subsection:

Open problem 17: Four Pronkin Rooks of same color.

Since Pronkin pieces don't need to be captured, it is possible to handle this question with, say, the Rook from a1 that is captured and 4 promoted white Rooks, each of which visit a1 at one moment of the solution.

The well-balanced (2+2) distribution also needs some analysis. Those cases are more difficult to construct than in the corresponding (4+0) distributions – only one rendition is known, the combination (Q,R,q,r), see problem **23**. The second challenge in this subsection asks for further homogeneous achievements:

Open problems 18 and 19: Four Pronkin pieces, with two-sided distributions (Q,Q,q,q) or (R,R,r,r) respectively.

I strongly doubt that the 2-sided Pronkin AUW could be feasible, and hence I didn't add it, but I would be glad to be wrong on this point!

Other deep open problems can be considered by replacing half of an "impossible" 4-fold Pronkin content by Ceriani-Frolkin pieces. In the 1-sided setting, the most homogeneous and difficult combination (S,S)+(S,S) has already been found (problem **24**). In the 2-sided setting the same content would be very difficult and interesting to fulfill, as well as the analogous content for Bishops:

Open problems 20 and 21: Two Pronkin pieces + two Ceriani-Frolkin pieces, with two-sided distribution (B,B)+(b,b) or (S,S)+(s,s) respectively.

Economic Pronkin combinations.

Generally speaking, a fundamental economy criteria is the number of captures, which obviously needs to be as small as possible. This economy of captures criteria is at least as important as the economy of moves criteria. Applied to the Pronkin setting, it leads to the very interesting and fruitful concept of economic Pronkin combination – the number of captures must be equal to the number of Pronkin pieces (which is of course the lowest bound). It is remarkable that a 4-fold rendition exists in this setting (problem **25**). The first challenge in this subsection asks for other such achievements:

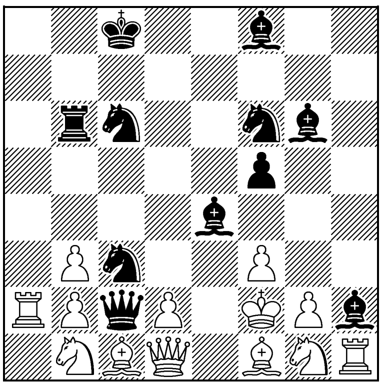
Open problem 22: New example with four Pronkin pieces, in an economic way.

Concerning 1-sided 3-fold renditions, it seems impossible to construct examples where the 3 thematic pieces are of the same type. In the 3/4 AUW setting, 3 cases are known among the 4 possibilities (problem **26** in the (Q,R,B) case, problem **27** in the (Q,R,S) case, and problem **28** in the (R,B,S) case, respectively). The second challenge in this subsection is thus obvious:

Open problem 23: Pronkin combination (Q,B,S), in an economic way.

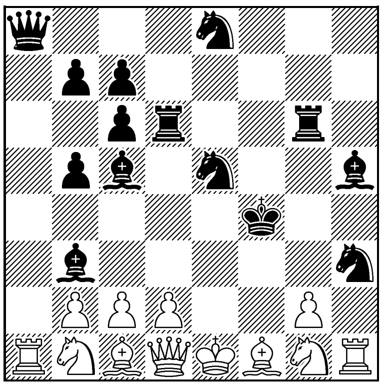
Of course such an achievement would also be valid from the black side. Note that the missing type is the Rook, which is not surprising as this type is the easiest with which to motivate a Pronkin piece.

20
Nicolas Dupont
Olympic Tourney 2012



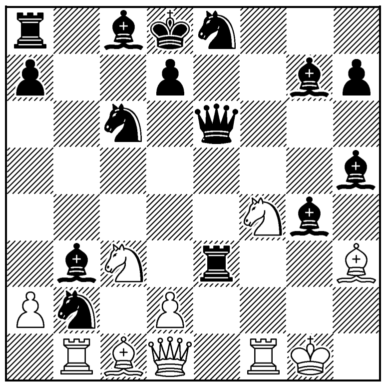
PG in 30.5 moves C+ 13+11

21
Nicolas Dupont
Gerd Wilts
R350 Probleemblad 2009
Dedicated to Andrey Frolkin and Dimitri Pronkin



PG in 31.5 moves C+ 12+14

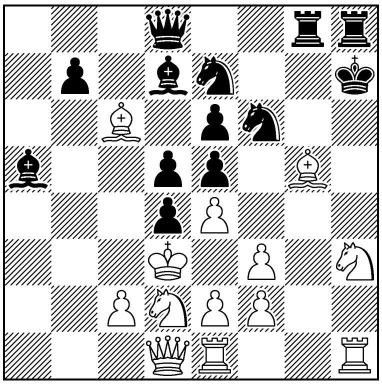
22
Nicolas Dupont
14835 Die Schwalbe 2011
Dedicated to Thomas Brand



PG in 33.5 moves C+ 10+15

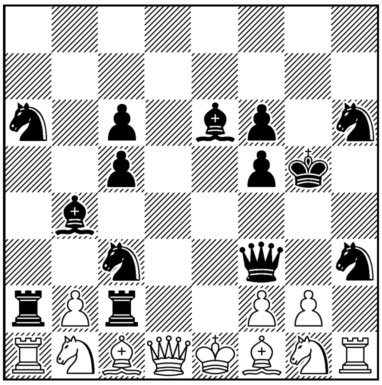
(20) 1.h4 a5 2.h5 a4 3.h6 a3 4.h×g7 h5 5.c4 Rh6 6.c5 Rb6 7.c6 h4 8.c×b7 c5 9.e4 Sc6 10.b8=S c4 11.S×d7 c3 12.Se5 Bf5 13.Sef3 Bg6 14.e5 f5 15.e6 Sf6 16.g8=S c2 17.S×e7 c×b1=B 18.Sd5 Be4 19.Sc3 Qd3 20.Sb1 0-0-0 21.e7 h3 22.e8=S h2 23.Sc7 h×g1=B 24.Sb5 Bh2 25.Sg1 Qc2 26.f3 Rd3 27.Kf2 Rb3 28.a×b3 a2 29.S5a3 a×b1=S 30.Ra2 Sc3 31.Sb1. **(21)** 1.e4 a6 2.Bb5 a×b5 3.h4 Ra6 4.h5 Rg6 5.h6 Sf6 6.h×g7 h5 7.a4 h4 8.a5 h3 9.a6 h2 10.a7 h×g1=S 11.Ra6 Sh3 12.Rc6 d×c6 13.e5 Kd7 14.e6+ Kd6 15.e×f7 e5 16.f4 e4 17.f5 Ke5 18.g8=B Bc5 19.f8=S e3 20.Bc4 Be6 21.a8=R Sbd7 22.Ra1 Qa8 23.Sh7 Rd8 24.Bf1 Se8 25.f6 e2 26.f7 e×d1=B 27.f8=Q Bh5 28.Qf3 Bb3 29.Qd1 Kf4 30.Sg5 Se5 31.Sf3 Rdd6 32.Sg1. **(22)** 1.h4 b5 2.h5 b4 3.h6 b3 4.h×g7 b×c2 5.b4 f5 6.b5 f4 7.b6 f3 8.b7 f×e2 9.f4 c5 10.f5 Qb6 11.f6 Kd8 12.f7 Sf6 13.g8=Q e×d1=S 14.Qg4 Sb2 15.Qd1 e5 16.g4 e4 17.g5 e3 18.g6 e2 19.g7 e×d1=B 20.g8=Q Bh5 21.Qg4 Bg7 22.Qd1 c×d1=B 23.Bh3 Bdg4 24.Se2 Re8 25.0-0 Re3 26.f8=Q+ Se8 27.Qf3 Qe6 28.Sf4 Sc6 29.b8=Q c4 30.Qb3 c3 31.Qbd1 c2 32.Sc3 c×d1=B 33.Rb1 Bb3 34.Qd1.

23
Nicolas Dupont
P0297v StrateGems 2011



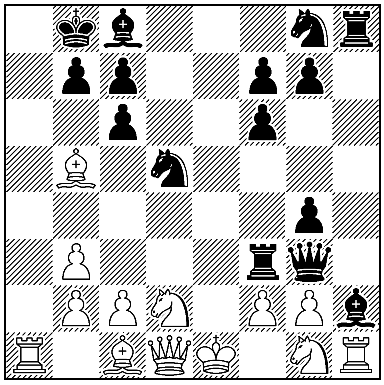
PG in 30.0 moves C? 13+13

24
Silvio Baier
Roberto Osorio JT55 2012



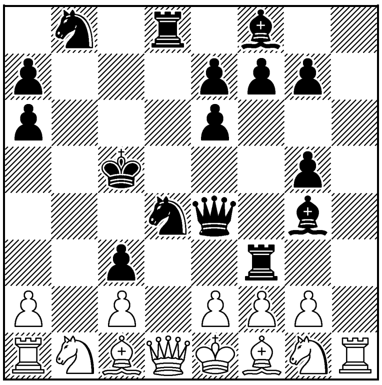
PG in 29.5 moves C+ 11+14

25
Unto Heinonen
R249 Problemblad 2004



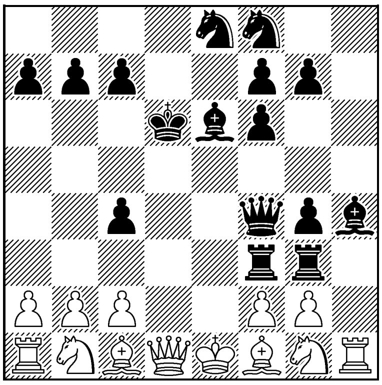
PG in 27.5 moves C+ 13+15

26
Unto Heinonen
3616 Tehtäväniekka 2011



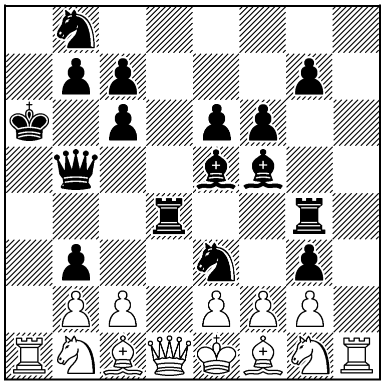
PG in 23.5 moves C+ 13+16

27
Unto Heinonen
R090 Problemblad 2000



PG in 25.5 moves C+ 13+16

28
Silvio Baier
P249 StrateGems 2009



PG in 27.5 moves C+ 13+16

(23) 1.h4 e5 2.h5 Qg5 3.h6 Qe3 4.d×e3 a5 5.Qd4 a4 6.Kd2 a3 7.Kd3 a×b2 8.a4 Bb4 9.a5 Se7 10.a6 0-0 11.h×g7 c5 12.Rh6 c×d4 13.Re6 f×e6 14.a7 Rf3 15.g×f3 h5 16.Bh3 h4 17.Bf5 h3 18.Be4 h2 19.Bc6 h1=R 20.e4 Rh8 21.Sh3 Kh7 22.g8=R d5 23.Rg1 Sd7 24.Bg5 Sf6 25.Sd2 Bd7 26.Rae1 Rag8 27.a8=Q b1=Q 28.Qa1 Ba5 29.Rh1 Qb6 30.Qd1 Qd8. **(24)** 1.h4 f5 2.h5 Kf7 3.h6 Kg6 4.h×g7 h5 5.a4 Sh6 6.g8=S h4 7.Sf6 e×f6 8.a5 Bb4 9.a6 c5 10.a×b7 a5 11.e4 a4 12.e5 a3 13.e6 a2 14.e7 a×b1=S 15.e8=S Ra2 16.Sd6 Sa6 17.b8=S Sc3 18.Sc6 d×c6 19.Sc4 Qd5 20.d4 Qf3 21.d5 h3 22.d6 h2 23.d7 h×g1=S 24.d8=S Sh3 25.Se6 Rd8 26.Sd4 Be6 27.Se2 Rd2 28.Sg1 R×c2 29.Sd2 Kg5 30.Sb1+. **(25)** 1.e4 h5 2.Qg4 h×g4 3.e5 Rh3 4.e6 Rb3 5.a×b3 Sc6 6.Ra6 Sb4 7.Rc6 d×c6 8.h4 Qd3 9.h5 Bd7 10.h6 0-0-0 11.h7 Kb8 12.Rh6 Bc8 13.Rf6 e×f6 14.h8=R Bd6 15.Rh1 Bh2 16.e7 Qg3 17.e8=R Rd3 18.Re4 Rf3

19.d4 a5 20.d5 a4 21.d6 a3 22.d7 a2 23.d8=Q a1=R 24.Qd1 Ra5 25.Sd2 Rh5 26.Bb5 Sd5 27.Ra4 Rh8 28.Ra1. **(26)** 1.d4 h6 2.Bg5 h×g5 3.Qd3 Rh3 4.Qa6 b×a6 5.b4 Bb7 6.b5 Bf3 7.b6 Bg4 8.b7 Rf3 9.h4 Sh6 10.h5 Sf5 11.h6 c5 12.h7 c4 13.Rh6 c3 14.Re6 d×e6 15.h8=R Qd5 16.Rh1 Qe4 17.d5 Kd7 18.d6 Kc6 19.d7 Kc5 20.d8=Q Sc6 21.Qd1 Rd8 22.b8=B Sfd4 23.Bf4 Sb8 24.Bc1. **(27)** 1.e4 h5 2.Qg4 h×g4 3.Sa3 Rh3 4.Sc4 Rf3 5.h4 Sh6 6.h5 Sf5 7.h6 d5 8.h7 d×c4 9.Rh6 Qd4 10.Rf6 e×f6 11.e5 Bd6 12.e6 Bg3 13.e7 Qf4 14.d4 Be6 15.d5 Kd7 16.d6 Kc6 17.h8=R Sd7 18.Rh1 Rh8 19.e8=S Sf8 20.d7 Rh3 21.Sd6 Bh4 22.Se4 Sd6 23.d8=Q Se8 24.Qd1 Rhg3 25.Sd2 Kd6 26.Sb1+. **(28)** 1.d4 h5 2.Bf4 h4 3.Bg3 h×g3 4.Sd2 Rh4 5.Sb3 Rg4 6.h4 Sh6 7.h5 Sf5 8.h6 a5 9.h7 a4 10.Rh6 a×b3 11.Rc6 d×c6 12.h8=R Qd5 13.Rh1 Qb5 14.d5 Raa4 15.d6 Rad4 16.a4 Be6 17.a5 Bd5 18.a6 e6 19.d7+ Ke7 20.a7 Kd6 21.a8=S Kc5 22.Sb6 Bd6 23.Sc4 Be5 24.Sa3 Kb6 25.d8=B Ka6 26.Bg5 f6 27.Bc1 Se3 28.Sb1+.

Interchange

This is another great theme in the Proof Game genre (and elsewhere too), belonging to the “impostor” family: some pieces on the diagram position are not what they seem to be ...

The (S,S) interchange.

An impostor Knight appears in one of the earliest proof game, the famous and unique one created by Tibor Orban. Interchanging a pair of Knights of same color is thus a kind of “double 1-sided Orban” and became a very popular theme. The first important challenge in this section is to accomplish the same trick for both sides:

Open problem 24: The two pairs of original one-sided Knights interchange their home-squares.

Maybe it is my favorite open problem in the whole Proof Game genre. I'm aware of neither any attempt near to this task, nor of a composer who seriously tried to reach it (myself included). Finding the right motivation is far from easy as a very deep strategy must be developed to allow at least 12 “invisible” moves from the 4 thematic Knights. Another dream would be to perform a double interchange (called the “Lois theme”) of a unique pair of one-sided Knights, but I strongly doubt it is possible. Under the Circe Cage fairy condition this Lois theme is done (problem **29**).

The interchange of Rooks is easier than for Knights, but even if we replace one pair of Knights by a pair of Rooks in the above task, it is still unknown, leading to a new challenge:

Open problem 25: A pair of original one-sided Knights and a pair of original Rooks from the other side, both interchange their home-squares.

This task has been solved when the 2 pairs of thematic pieces belong to the same side (problem **30**). The next challenge for this section deals with the largest number of capture-free moves from a pair of one-sided Knights interchanging their places:

Open problem 26: A pair of original one-sided Knights interchange their home-squares while playing more than twelve moves without captures.

Of course this 12 moves feature concerns the sum of moves for the 2 thematic Knights. This excellent record, very difficult to break, has been reached in problem **31**.

Another challenge in this section asks for constructing a pair of Ceriani-Frolkin pieces of the same type for the non-thematic side. Only the Knight case is known (problem **32**).

Open problem 27: A pair of original one-sided Knights interchange their home-squares while the other side performs a couple of Ceriani-Frolkin pieces of the same type – Queen, Rook or Bishop.

The (R,R) interchange.

As already noticed, Rook interchanges are simpler than for Knights. Hence even stronger achievements might be performed, suggesting the following challenge:

Open problem 28: A pair of original one-sided Rooks interchange twice their home-squares.

The closest rendition to this task was obtained in problem **33**. Here each white Rook visits the other's homebase and returns home, but never do both Rooks simultaneously reside at the other's homebase.

The analogue of open problem 24 for Rooks has been constructed (problem **34**). Concerning Ceriani-Frolkin pieces of the same type for the non-thematic side, more might be asked, and indeed a still unpublished problem by Silvio Baier shows 3 Ceriani-Frolkin Queens. The next challenge of this section is to fulfill the remaining cases:

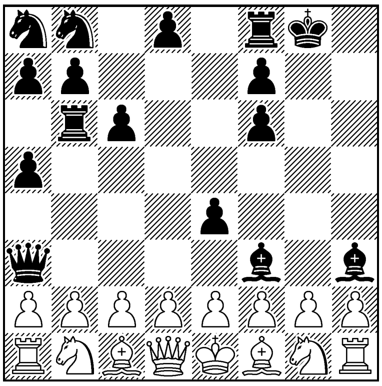
Open problem 29: A pair of original one-sided Rooks interchange their home-squares while the other side performs three Ceriani-Frolkin pieces of the same type – Rook, Bishop or Knight.

Other interchange.

We have seen that the Lois theme is an unachieved task for 1-sided Rooks and almost certainly unreachable for 1-sided Knights. Nevertheless this theme has been achieved in numerous cases for more general settings, among them (Ra1,Sb1), see problem **35**. The last challenge in this section has some small chance to be realized as it needs fewer "invisible" moves than for 2 Knights:

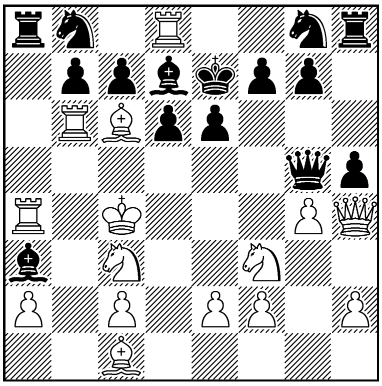
Open problem 30: An original one-sided pair (Knight, Bishop) interchange twice their home-squares.

29
Nicolas Dupont
Paul Raican
6220 Phénix 2010



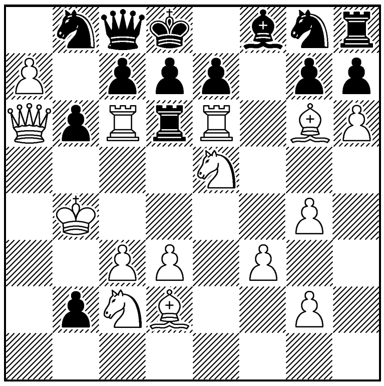
PG in 12.0 moves C? 16+16
Circe Cage

30
Michel Caillaud
R136 Probleemblad 2001



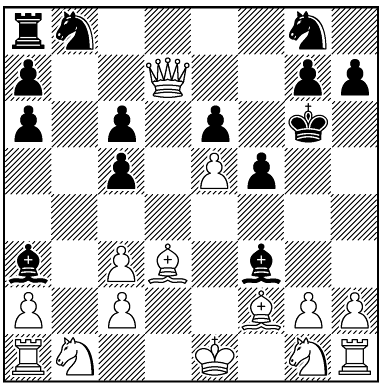
PG in 21.0 moves C+ 15+15

31
Gianni Donati
Jorge Lois JT60 2006



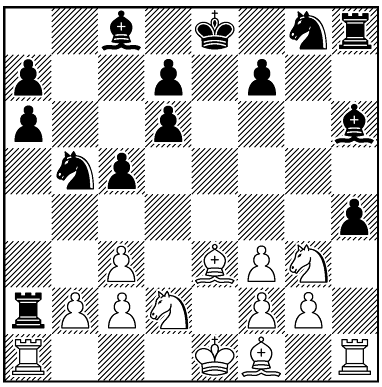
PG in 28.0 moves C+ 15+14

32
Roberto Osorio
Jorge Lois
13942 Die Schwalbe 2008



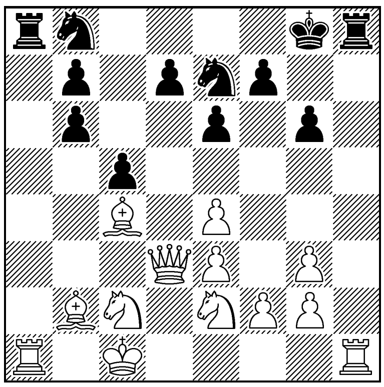
PG in 20.0 moves C+ 14+14

33
Satoshi Hashimoto
PR16 Problem Paradise 1999



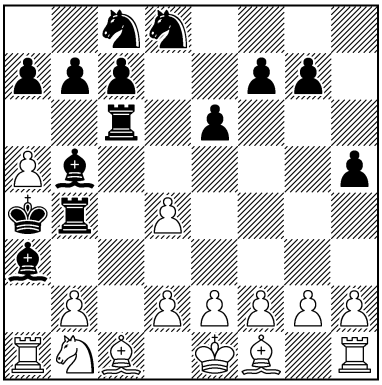
PG in 21.5 moves C? 13+14

34
Unto Heinonen
Springaren 1996



PG in 19.0 moves C+ 13+12

35
Roberto Osorio
Jorge Lois
Rustam Ubaidullaev
R373 Probleemblad 2010



PG in 19.5 moves C+ 14+14

(29) 1.Sc3 a5 2.Sd5 Ra6 3.S×e7(a7) Rb6 4.S×g8(Sa8) Be7 5.Sh3 Bf6 6.S×f6(Bf3)+ Q×f6(Sg1) 7.Sg5 0-0 8.S×h7(c3) c6 9.S×f6(Qa3)+ g×f6(Sb1) 10.S×c3(d8) d5 11.Sh3 B×h3(Sb1) 12.Se4 d×e4(Sg1). **(30)** 1.b4 Sf6 2.b5 Se4 3.b6 S×d2 4.b×a7 Sb3 5.Qd4 h5 6.Qh4 Rh6 7.g4 Ra6 8.Bg2 e6 9.Bc6 Ba3 10.Sf3 Sc5 11.Kd2 Qg5+ 12.Kc3 Ke7 13.Rd1 d6 14.Rd4 Sbd7 15.Ra4 Sf6 16.Kc4 Bd7 17.Sc3 Rh8 18.a8=R Sg8 19.Rd8 Ra8 20.Rb1 Sa6 21.Rb6 Sb8. **(31)** 1.h4 f5 2.h5 f4 3.h6 f3 4.e×f3 Sc6 5.Bd3 Se5 6.Bg6+ Sf7 7.d3 a5 8.Kd2 a4 9.Kc3 a3 10.Bd2 a×b2 11.a4 Ra6 12.a5 Rd6 13.a6 Sf6 14.a7 Sg4 15.Ra6 Se5 16.Sa3 Sc6 17.Qa1 Sb8 18.Rc6 b6 19.Kb4 Ba6 20.c3 Bc4 21.Sc2 Be6 22.Qa6 Bg4 23.f×g4 Qc8 24.Sf3 Kd8 25.Re1 Sg5 26.Re6 Se4 27.Se5 Sf6 28.f3 Sg8. **(32)** 1.f4 e6 2.f5 Ba3 3.f6 Qe7 4.f×e7 f5 5.b4 Kf7 6.e8=S c5 7.Sc7 Sf6 8.Sa6 b×a6 9.b5 Bb7 10.b6 Bf3 11.b7 Sc6 12.b8=S Se7 13.Sc6 Rhb8 14.e4 Rb3 15.e5 Rc3 16.d×c3 d×c6 17.Be3 Sd7 18.Bf2 Sb8 19.Qd7 Kg6 20.Bd3 Sg8. **(33)** 1.a4 Sc6 2.a5 Rb8 3.a6 b×a6 4.Ra4 Rb3 5.Rh4 Rc3 6.d×c3 g5 7.Qd6 e×d6 8.Be3 Qf6 9.Sd2 Qf3 10.e×f3 g4 11.Bd3 g3 12.Se2 g×h2 13.Sg3 h5 14.Ke2 Bh6 15.Ra1 h1=R 16.Raa4 Ra1 17.Rh1 Ra2 18.Ra1 Sd4+ 19.Ke1 Sb5 20.Rh4 c5 21.Rh1 h4 22.Bf1. **(34)** 1.b4 c5 2.b5 Qc7 3.b6 Qg3 4.h×g3 h6 5.R×h6 a×b6 6.Rc6 R×a2 7.Sa3 R×c2 8.Bb2 Rc4 9.Sc2 Rch4 10.e4 g6 11.Bc4 Bh6 12.Se2 Be3 13.d×e3 e6 14.Qd3 Se7 15.0-0-0 0-0 16.R×c8 Sbc6 17.Ra8 Rh8 18.Ra1 Ra8 19.Rh1 Sb8. **(35)** 1.Sf3 h5 2.Se5 Rh6 3.S×d7 K×d7 4.a4 Kc6 5.a5 Kb5 6.Sa3+ Ka4 7.Rb1 Qd3 8.Sb5 Bd7 9.Sd4 Bb5 10.Sb3 Sc6 11.c×d3 Rd8 12.Qc2 Rd4 13.Qc3 Sd8 14.Sa1 Rc6 15.Sc2 e6 16.Sa3 Se7 17.Ra1 Sc8 18.Sb1+ Ba3 19.Qb4+ R×b4 20.d4.

Capture-free circuit

Remember that a circuit, in its more general acceptance, means that a piece leaves and return to a given square, after any path. There are various kinds of circuits (for example a switchback or a rundlauf), which leads to different length records.

The subject of this section is to recall what are, for each piece type, the longest capture-free circuit (mainly obtained via successive switchbacks, otherwise called oscillations), as well as the longest capture-free rundlauf (the path should draw a polygonal of non-zero area, mainly obtained via triangulations, with tempo motivation). Open problems are obviously to break those records. The no-capture condition provides much more interesting renditions, in particular for finding the right motivation.

The thematic piece is a King.

A King can be incarcerated with its oscillations as the only possible remaining moves for that side. Using this trick, the record to be broken goes as follows:

Open problem 31: Capture-free circuit from a King with more than twenty six moves.

The 26-moves circuit from a King is constructed in problem **36**. If we delete the oscillation possibility, we obtain:

Open problem 32: Capture-free rundlauf from a King with more than seventeen moves.

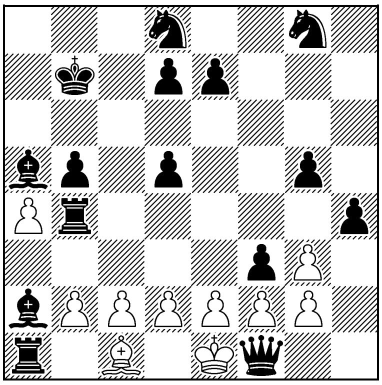
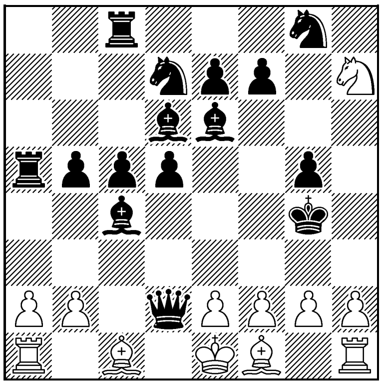
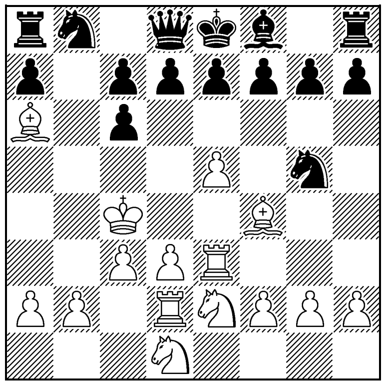
The 17-moves rundlauf from a King is constructed in problem **37**.

The thematic piece is a Queen.

Even if a Queen can theoretically be incarcerated, I haven't find this trick already used in the literature. It implies that this subsection contains only one record to break:

Open problem 33: Capture-free rundlauf from a Queen with more than thirteen moves.

The 13-moves rundlauf from a Queen is constructed in problem **38**.

36	37	38
Satoshi Hashimoto	**Unto Heinonen**	**Olli Heimo**
1890 Orbit 2005	*R202v The Problemist 1992*	*1351 Suomen Tehtäväniekat 1997*
		
PG in 40.0 moves C? 10+15	PG in 26.0 moves C? 12+15	PG in 18.0 moves C+ 15+15

(36) 1.Sf3 a5 2.Sd4 a4 3.Sb3 a×b3 4.a4 f5 5.Ra2 b×a2 6.Rg1 a×b1=S 7.Rh1 Sc3 8.Rg1 S×d1 9.Rh1 Sc3 10.Rg1 Se4 11.Rh1 Sg3 12.h×g3 f4 13.Rh6 f3 14.Rd6 c×d6 15.Kd1 Qa5 16.Ke1 Qh5 17.Kd1 Qh1 18.Ke1 h5 19.Kd1 h4 20.Ke1 Rh5 21.Kd1 Rb5 22.Ke1 g5 23.Kd1 Bg7 24.Ke1 Bc3 25.Kd1 Ba5 26.Ke1 Rb4 27.Kd1 b5 28.Ke1 Bb7 29.Kd1 Bd5 30.Ke1 Sc6 31.Kd1 0-0-0 32.Ke1 Kb7 33.Kd1 Rc8 34.Ke1 Sd8 35.Kd1 Rc3 36.Ke1 Ra3 37.Kd1 Ra1 38.Ke1 Ba2 39.Kd1 d5 40.Ke1 Q×f1+. **(37)** 1.Sf3 a5 2.Sd4 a4 3.Sb3 a×b3 4.Sc3 b×c2 5.Se4 c×d1=B 6.Sg5 Bb3 7.S×h7 Bc4 8.Sg5 Rh5 9.Sh7 Rha5 10.Kd1 d5 11.Kc2 Kd7 12.Kc3 Ke6 13.Kd4 Kf5 14.Ke3 Be6 15.Kf3 Sd7 16.Kg3 Rc8 17.Kh4 g5+ 18.Kh3 Bg7 19.Kg3 Be5+ 20.Kf3 Bd6 21.Ke3 Kg4 22.Kd4 c5+ 23.Kc3 Qb6 24.Kc2 Qb4 25.Kd1 b5 26.Ke1 Q×d2+. **(38)** 1.e4 Sf6 2.e5 Se4 3.Qf3 Sg5 4.Qc6 b×c6 5.Sc3 Ba6 6.B×a6 Qc8 7.Ke2 Qb7 8.Kd3 Qb6 9.Kc4 Qe3 10.d3 Qh3 11.Bf4 Qh6 12.Re1 Qd6 13.Re3 Qa3 14.Sge2 Qa5 15.Rd1 Qb6 16.Rd2 Qb7 17.Sd1 Qc8 18.c3 Qd8.

The thematic piece is a Rook.

A Rook is probably the easiest piece type to incarcerate, and as a consequence the record to break is the longest overall:

Open problem 34: Capture-free circuit from a Rook with more than thirty moves.

The 30-moves circuit from a Rook is constructed in problem **39**. Obviously the record is far less without the oscillations possibility:

Open problem 35: Capture-free rundlauf from a Rook with more than fifteen moves.

The 15-moves rundlauf from a Rook is constructed in problem **40**.

The thematic piece is a Bishop.

A Bishop is difficult to incarcerate, hence I used a promoted one in problem **41** to establish the following record:

Open problem 36: Capture-free circuit from a Bishop with more than sixteen moves.

Note that problem **41** also shows 8 times the Donati theme, which seems another valid record. Without oscillations, the record to break is:

Open problem 37: Capture-free rundlauf from a Bishop with more than thirteen moves.

The 13-moves rundlauf from a Bishop is constructed in problem **42**.

The thematic piece is a Knight.

Although a Knight is difficult to incarcerate, oscillations remain the most useful tool:

Open problem 38: Capture-free circuit from a Knight with more than fourteen moves.

The 14-moves circuit from a Knight is constructed in problem **43**. Of course a Knight can't triangulate, so new tricks should be used in the rundlauf setting, e.g. shielding. Various problems show the same record, I choose problem **44** for illustration, where the necessity of the long circuit is 2-fold: the thematic Knight must leave its initial square to avoid an auto-check, and then its returning path appears to be very long:

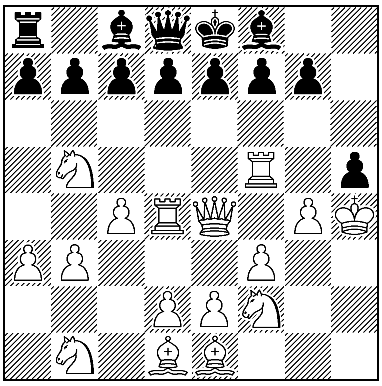
Open problem 39: Capture-free rundlauf from a Knight with more than twelve moves.

The thematic piece is a Pawn.

Note that every move counts (before and after promotion), and there must be no capture at all, even for the Pawn. The current record (to my best knowledge) is shown in problem **45**. Mark told me that its main objective wasn't to establish a length record, so it is possible that the record below might not be so complicated to break. The right way could be to use the oscillation trick for a promoted piece, as in the Bishop case.

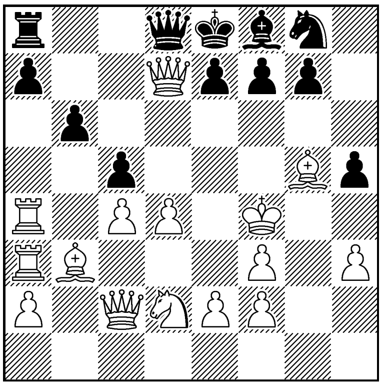
Open problem 40: Capture-free circuit from a Pawn with more than thirteen moves.

39
Unto Heinonen
2375v U.S. Problem Bulletin 1992



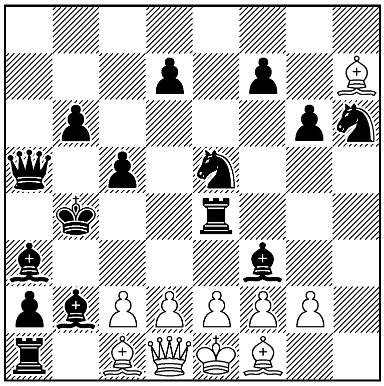
PG in 35.5 moves C? 16+13

40
Unto Heinonen
543v Suomen Tehtäväniekat 1994



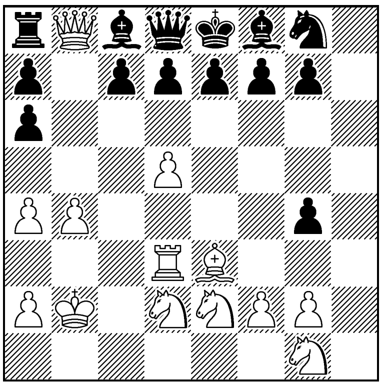
PG in 24.5 moves C? 15+12

41
Nicolas Dupont
StrateGems 2004
Gianni Donati JT50



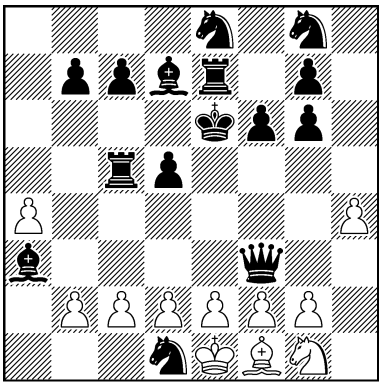
PG in 29.5 moves C? 10+15

42
Unto Heinonen
7942v Die Schwalbe 1992



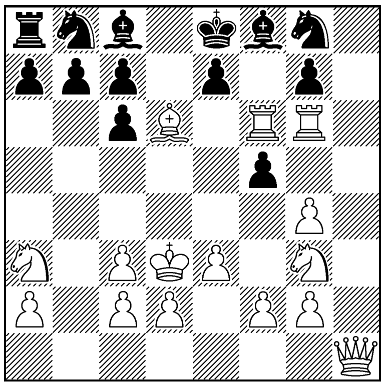
PG in 24.5 moves C? 13+14

43
Unto Heinonen
R128 Probleemblad 2001



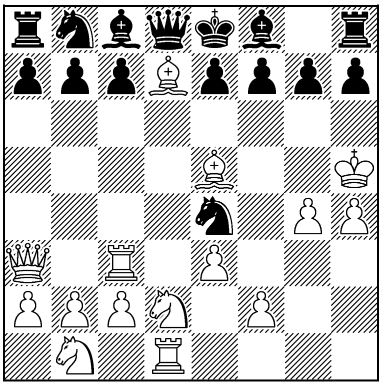
PG in 26.0 moves C+ 11+15

44
Gianni Donati
The Problemist Supplement 2001
TT3



PG in 20.0 moves C? 15+13

45
Mark Kirtley
P0057 StrateGems 2000



PG in 19.5 moves C+ 15+15

(39) 1.h4 Sc6 2.h5 Se5 3.Rh4 Sg6 4.h×g6 h5 5.Sh3 Rh7 6.g×h7 Rb8 7.h×g8=S Ra8 8.Sh6 Rb8 9.Sf5 Ra8 10.Sd4 Rb8 11.Sb5 Ra8 12.Rd4 Rb8 13.g4 Ra8 14.Bg2 Rb8 15.Bd5 Ra8 16.Bb3 Rb8 17.c4 Ra8 18.Qc2 Rb8 19.Qe4 Ra8 20.Bd1 Rb8 21.b3 Ra8 22.Ba3 Rb8 23.Bd6 Ra8 24.a3 Rb8 25.Ra2 Ra8 26.Rc2 Rb8 27.Rc3 Ra8 28.Rf3 Rb8 29.Rf5 Ra8 30.f3 Rb8 31.Kf2 Ra8 32.Kg3 Rb8 33.Kh4 Ra8 34.Bg3 Rb8 35.Be1 Ra8 36.Sf2. **(40)** 1.b4 c5 2.b5 Sc6 3.b×c6 b6 4.c7 Bb7 5.c8=Q Bf3 6.g×f3 h5 7.Bh3 Rh6 8.Be6 Rg6 9.h3 R×g1+ 10.R×g1 Rb8 11.Rg4 Rb7 12.Ra4 Rc7 13.d4 Rc6 14.Bg5 Rd6 15.Kd2 Rd5 16.Ke3 Rf5 17.Sd2 Re5+ 18.Kf4 Rd5 19.Rb1 Rd6 20.Rb3 Rc6 21.Rba3 Rc7 22.Bb3 Rb7 23.c4 Rb8 24.Qc2 Ra8 25.Q×d7+. **(41)** 1.Sf3 e5 2.Sd4 e×d4 3.Sc3 d×c3 4.h4 c×b2 5.Rh3 b×a1=B 6.Rg3 Bb2 7.Rg6 h×g6 8.a4 Rh5 9.a5 R×a5 10.h5 Ra1 11.h6 a5 12.h×g7 Sh6 13.g8=B a4 14.Bh7 a3 15.Bg8 a2 16.Bh7 Bfa3 17.Bg8 Ke7 18.Bh7 Kd6 19.Bg8 Kc5 20.Bh7 Kb4 21.Bg8 c5 22.Bh7 Qa5 23.Bg8 b6 24.Bh7 Bb7 25.Bg8 Bf3 26.Bh7 Sc6 27.Bg8 Re8 28.Bh7 Re4 29.Bg8 Se5 30.Bh7. **(42)** 1.d4 Sc6 2.d5 Sd4 3.h4 S×e2 4.Rh3 Sc3 5.Ba6 h5 6.Rd3 Rh6 7.Be3 Rb6 8.Sd2 Rb3 9.c×b3 Sa4 10.b×a4 b×a6 11.Qb3 Bb7 12.0-0-0 Bc6 13.Qb8 Bb5 14.b4 Bc4 15.Kb2 Bb3 16.Rc1 Bd1 17.Rc4 Bc2 18.Rg4 h×g4 19.h5 Bb3 20.h6 Bc4 21.h7 Bb5 22.h8=S Bc6 23.Sg6 Bb7 24.Sf4 Bc8 25.Sfe2. **(43)** 1.Sc3 a5 2.Sd5 a4 3.S×e7 K×e7 4.h4 Ke6 5.Rh3 Qf6 6.Rb3 a×b3 7.a4 Qf3 8.Ra2 b×a2 9.Sh3 a1=S 10.Sg1 Sb3 11.Sh3 S×c1 12.Sg1 Sa2 13.Qa1 Sc3 14.Qa3 Sd1 15.Qd3 Ba3 16.Qg6+ h×g6 17.Sh3 Rh5 18.Sg1 Rc5 19.Sh3 d5 20.Sg1 Sd7 21.Sh3 Sdf6 22.Sg1 Bd7 23.Sh3 Re8 24.Sg1 Re7 25.Sh3 Se8 26.Sg1 f6. **(44)** 1.e3 Sf6 2.Bb5 Sd5 3.Bc6 d×c6 4.Ke2 Qd6 5.Kd3 Qg3 6.h×g3 h6 7.R×h6 f5 8.Rf6 Rh4 9.Se2 Rc4 10.Qh1 Rc3+ 11.b×c3 Sb6 12.Ba3 Sc4 13.Bd6 Sa5 14.Sa3 Sb3 15.Rb1 Sd4 16.Rb4 Se6 17.Rg4 Sd8 18.Rgg6 Sf7 19.g4 Sh6 20.Sg3 Sg8. **(45)** 1.h4 Sf6 2.Rh3 Se4 3.Rc3 S×d2 4.Sf3 Se4 5.Qd6 Sc6 6.Qa3 d6 7.Bf4 d5 8.e3 d4 9.Bb5 d3 10.Be5 d2+ 11.Ke2 d1=R 12.Sbd2 Rh1 13.Rd1 Rh3 14.Sb1 Rg3 15.Sfd2 Rg6 16.Kf3 Re6 17.Kg4 Rd6+ 18.Kh5 Rd7 19.g4 Sb8 20.B×d7+.

Other length records

I begin this section with a fundamental challenge – obtaining the longest possible proof game. The current record is provided by problem **46**.

Open problem 41: Proof game with more than 57.5 moves.

A closely related challenge deals with capture-free proof games. The current record is provided by problem **47**.

Open problem 42: Capture-free proof game with more than 43 moves.

Is there any chance to break those records? What is sure is that it must be extremely difficult as they were established by very clever and experienced composers, after long and deep research. But among the huge amount of possibilities, I would be surprised if those records were ultimate . . .

Now I indicate 2 new record numbers. The first one concerns the well-known en-passant capture theme:

Open problem 43: Proof game with more than three en-passant captures.

Very few examples with 3 such captures exist. Below is one with a (3+0) distribution (problem **48**). I don’t know of any (2+1) rendition but, among the 3 possible 4-fold distributions, (4+0), (3+1) and (2+2), it seems that there are better chances with the (3+1) combination than with any others. An idea would be to find an opening with one en-passant capture by a side, and then the 3 remaining en-passant captures by the other side, following more or less the same ideas developed in Thierry’s problem.

The last record number concerns tempo move (loss of tempo). It is another paradoxical feature in the Proof Game genre. Unfortunately there is no strict definition of what a “tempo move” or a “loss of tempo” is, and hence I must introduce a short piece of theory to know precisely which is the theme under consideration. I thank Peter Wong for his advice concerning this subject.

The fundamental concept is "individual tempo move". Roughly speaking, it means that a piece can reach in 1 move a square it will occupy lately in the solution, but in fact it reaches this square in 2 moves. A precise definition might goes as follows:

A given move by a piece X, Xa-Xb, is called an "individual tempo move" if X further plays another move Xb-Xc, and the couple (Xa-Xb, Xb-Xc) can be replaced, in the solution, by the couple (Pass, Xa-Xc) or by the couple (Xa-Xc, Pass). Here "Pass" stands for the empty move and Xa-Xc must be a legal move.

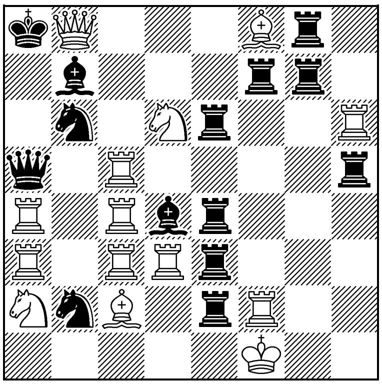
Note that it is different from a "tempo maneuver", which means a series of moves to gain a tempo, as in the above rundlauf records. This is also different from a "tempo sacrifice" where a piece plays once to be captured, although it might have been theoretically captured without having moved (by replacing its move by an empty one). The record to be broken goes as follows:

Open problem 44: Proof game with more than five individual tempo moves.

Indeed, the highest known number of individual tempo moves in a proof game is 5 (problem **49**). Another very interesting challenge is to break the record of 4 individual tempo moves by Pawns, as shown in problem **50**. Note that, in this example, 1.e3 is not an individual tempo move, as the above Pass trick is not satisfied.

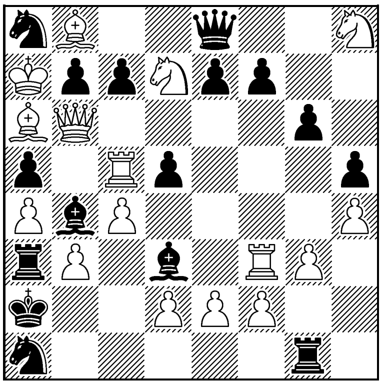
Open problem 45: Proof game with more than four individual tempo moves by Pawns.

46
Dimitri Pronkin
Andrey Frolkin
6631 Die Schwalbe 1989



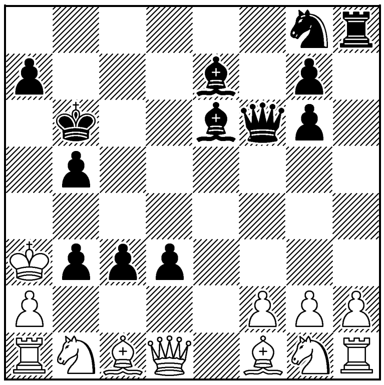
PG in 57.5 moves C? 14+14

47
Unto Heinonen
Probleemblad 1990



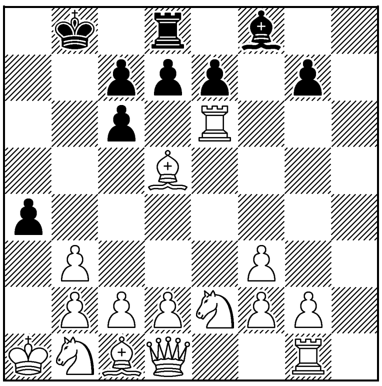
PG in 43.0 moves C? 16+16

48
Thierry Le Gleuher
R028v Probleemblad I 1999



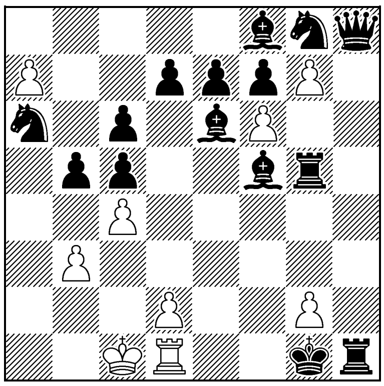
PG in 17.0 moves C+ 12+13

49
Peter Wong
R233 The Problemist 1995
Dedicated to R. Meadley



PG in 21.5 moves C+ 15+9

50
Thierry Le Gleuher
R312v Probleemblad 2007

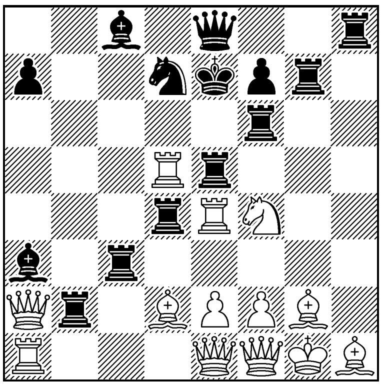


PG in 29.5 moves C? 9+15

(46) 1.a4 h5 2.a5 h4 3.a6 h3 4.a×b7 h×g2 5.h4 d5 6.h5 d4 7.h6 d3 8.h7 d×c2 9.d4 a5 10.Bh6 c1=R 11.e4 Rc5 12.Se2 Rh5 13.e5 c5 14.e6 Sc6 15.b8=R a4 16.Rb4 a3 17.Ra4 c4 18.b4 c3 19.b5 c2 20.b6 c1=R 21.b7 Rc4 22.b8=R Qa5+ 23.Rbb4 Bb7 24.Sbc3 0-0-0 25.e×f7 e5 26.Rc1 Bc5 27.f8=R a2 28.Rf3 a1=R 29.Sa2 g1=R 30.Rfa3 Rg6 31.f4 Re6 32.f5 g5 33.f6 g4 34.f7 g3 35.f8=R g2 36.Rf5 g1=R 37.Bf8 Rg7 38.Sg3 e4 39.Bd3 e3 40.0-0 e2 41.Rcc3 e1=R 42.Bc2 R1e3 43.d5 Rdd7 44.d6 Rdf7 45.d7+ Kb8 46.Qd6+ Ka8 47.Qc7 Sge7 48.d8=R+ Sc8 49.Rdd3 Rhg8 50.h8=R Rae1 51.Rh6 R1e2 52.R1f2 Rce4 53.Kf1 Bd4 54.Rfc5 Se5 55.Sf5 Sc4 56.Sd6 Sb2 57.Rbc4 Sb6 58.Qb8+. **(47)** 1.h4 a5 2.Rh3 Ra6 3.Rf3 Rg6 4.Sh3 Rg3 5.Sf4 Rh3 6.g3 Rh2 7.Bh3 Sh6 8.Be6 Sf5 9.Bc4 d5 10.Kf1 Rh1+ 11.Kg2 Rg1+ 12.Kh3 Kd7 13.Kg4 h5+ 14.Kg5 Rh6 15.a4 Rb6 16.Raa3 Kc6 17.Rac3 Rb3 18.Sg6 Ra3 19.b3 Ra2 20.Ba3 Qd6 21.Bc5 Sd7 22.Ba7 Sb6 23.Sh8 Kc5 24.Ba6+ Kb4 25.Rc5 g6 26.Sc3 Bg7 27.Se4 Bc3 28.Qa1 Sd4 29.Kh6 Bd7 30.Kg7 Bb5 31.Kf8 Bd3 32.Ke8 Qc6+ 33.Kd8 Sc4 34.Kc8 Ka3 35.Kb8 Bb4 36.Ka8 Qe8+ 37.Bb8 Sb6+ 38.Ka7 Sa8 39.c4 Sc2 40.Qf6 Sa1 41.Qb6 Kb2 42.Sf6 Ra3 43.Sd7 Ka2. **(48)** 1.e4 d5 2.e5 Kd7 3.e6+ Kc6 4.e×f7 e5 5.Ke2 Qf6 6.Kd3 Be7 7.f8=Q Be6 8.Q×b8 b5 9.Q×a8+ Kb6 10.Qe8 c5 11.Qg6 h×g6 12.Kc3 e4+ 13.d4 e×d3 e.p.+ 14.Kb3 d4+ 15.c4 d×c3 e.p.+ 16.Ka3 c4+ 17.b4 c×b3 e.p.#. **(49)** 1.h3 Sc6 2.h4 Se5 3.h5 Sg6 4.h×g6 f6 5.g×h7 f5 6.h×g8=B Rh3 7.Bd5 Rb3 8.a×b3 f4 9.Ra6 f3 10.Re6 a6 11.e×f3 a5 12.Bb5 a4 13.Bbc6 b×c6 14.Ke2 Bb7 15.Kd3 Ba6+ 16.Kc3 Be2 17.S×e2 Qb8 18.Rg1 Qb4+ 19.K×b4 0-0-0 20.Ka3 Kb7 21.Ka2 Kb8 22.Ka1. **(50)** 1.e3 h5 2.Qg4 h×g4 3.Sf3 g×f3 4.Be2 f×e2 5.Rf1 e×f1=B 6.Sc3 Bc4 7.Sa4 Be6 8.Sb6 a×b6 9.b3 Ra5 10.Ba3 Rg5 11.Bc5 b×c5 12.a3 b5 13.a4 Bb7 14.a5 Be4 15.a6 c6 16.a7 Sa6 17.f3 Qb8 18.f4 Kd8 19.f5 Kc7 20.f6 B6f5 21.e4 Kd6 22.e5+ K×e5 23.h3 Kf4 24.h4 Kg3 25.h5 Kh2 26.h6 Kg1 27.h×g7 Rh1 28.c3 Qh2 29.c4 Qh8 30.0-0-0+.

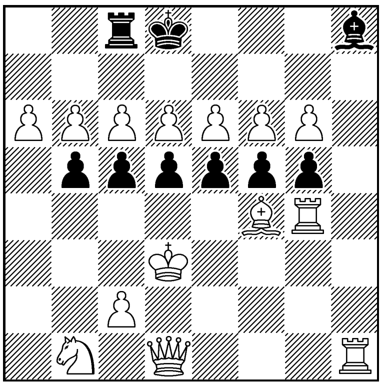
Figurative problems

51
Michel Caillaud
R129 Probleemblad II 2001



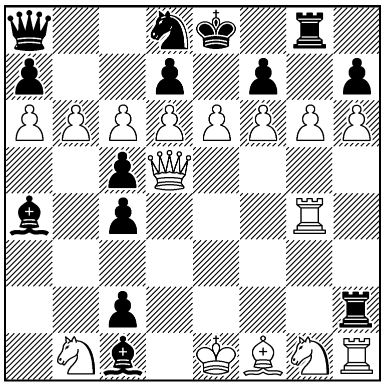
PG in 38.0 moves C? 13+14

52
Rustam Ubaidullaev
P0120 StrateGems 2003



PG in 25.5 moves C+ 14+9

53
Henryk Grudzinski
P0211 StrateGems 2007



PG in 19.0 moves C? 15+14
Circe Parrain

(51) 1.a4 h5 2.a5 h4 3.a6 h3 4.a×b7 h×g2 5.h4 e5 6.h5 e4 7.Rh4 e3 8.Sh3 g1=R 9.h6 Rg5 10.h7 Re5 11.h×g8=B g5 12.Bh7 g4 13.Be4 g3 14.Bh1 g2 15.Re4 g1=R 16.Sf4 Rg7 17.Bfg2 d5 18.Kf1 d4 19.Kg1 d3 20.Qf1 d×c2 21.d4 Ba3 22.Sd2 e×d2 23.d5 d1=R 24.d6 Rd4 25.d7+ Ke7 26.Bd2 Qe8 27.d8=R c1=R 28.Rd5 Sd7 29.b8=Q Rc6 30.Qb3 Rf6 31.Qa2 c5 32.b4 c4 33.b5 c3 34.b6 c2 35.b7 c1=R 36.b8=Q Rc3 37.Qbb1 Rb8 38.Qbe1 Rb2. **(52)** 1.d4 c5 2.d5 Sc6 3.d×c6 d5 4.e4 Qd6 5.e5 Kd8 6.e×d6 e5 7.f4 Be6 8.f5 Rc8 9.f×e6 f5 10.g4 Sf6 11.g5 Rg8 12.g×f6 g5 13.h4 Rg6 14.h5 Bg7 15.h×g6 h5 16.a4 h4 17.a5 h3 18.Ra4 h2 19.Rg4 h×g1=Q 20.Bf4 Q×f1+ 21.Kd2 Qa6 22.b4 b5 23.Kd3 Qb6 24.a×b6 a5 25.b×a5 Bh8 26.a6. **(53)** 1.a4 b5 2.a×b5 Ba6 3.R×a6 c5 [Ba4] 4.Rg6 Sa6 5.Rg3 Rb8 6.b×a6 R×b2 7.R×g7 [Pb6] Sf6 [Pf5] 8.Rg3 R×c2 9.Rg7 [Pc6] Sg8 10.Rg4 R×d2 11.R×g8 [Pd6] Qa8 [Sd8] 12.e4 R×f2 13.Qd5 [Pf6] R×g8 14.Qd1 [Rg4] R×g2 15.Qd5 [Pg6] Bh6 16.e×f5 Be3 [Pc2] 17.Qd1 R×h2 18.Qd5 [Ph6] e6 19.f×e6 B×c1 [Pc4].

This particular Proof Game feature (the theme is visible on the diagram position) has been intensively worked in the past, but less nowadays. It is a pity as much remains to do. The first challenge for this section is quite famous:

Open problem 46: Construction of a one-sided diagonal of Rooks.

This great task is perfectly homogeneous and one of the deepest and most beautiful. The best attempt towards its solution is provided in problem **51**, where only one Rook is missing in the thematic diagonal. The fact that a black Pawn is still standing on a7 (and thus might reach in a straight line the missing spot a1) is an indication that Michel's problem is very close to being successful – it just remains to find some more thematic moves!

The second and last challenge in this section also deals with a line, but this time a row of Pawns:

Open problem 47: The original white Pawns fill the sixth row.

Of course this task also makes sense with black Pawns filling the third row. The best attempt towards its solution is provided by problem **52**. Note that the full task has been filled, but under the Circe Parrain fairy condition (problem **53**).

Two-solutions

Proof games with more than one solution are often fascinating, and very difficult to compose, especially when the solutions are very different (which is more or less the main aim of this topic). The 6 challenges of this section ask for improving such differences or showing a new one:

Open problem 48: Two-solutions proof game, one solution showing a white en-passant capture, the other a black.

This task has recently been shown for castling instead of en-passant capture (problem **54**). The next challenge is almost the same, except that only one side is concerned:

Open problem 49: Two-solutions proof game, each solution showing a different en-passant capture by the same side.

This task as also been shown for castling instead of en-passant capture in the famous problem **55**. Another important question concerning 2-solutions is to achieve the maximum difference between the length of the 2 solutions. It can be, in theory, every number not divisible by 4 (as we can always increase by 4 the number of single-moves of a solution by beginning with a Knight switchback from each side).The highest maximum difference that has been demonstrated is 9 (problem **56**).

Open problems 50 and 51: Two-solutions proof game, where the difference between the move numbers is ten or eleven respectively.

Reaching 10 or 11 will ask for very different strategies – it is therefore logical to consider them as different problems. Note that 12 is divisible by 4 and there is almost no chance to reach 13 or higher.

The next challenge in this section concerns the number of pieces visible in the diagram position, with "different identities". This means that such a piece is issued from a given original square in one solution, and from a different original square in the other solution. For a Bishop or a Queen, one such piece must obviously be promoted in both solutions.

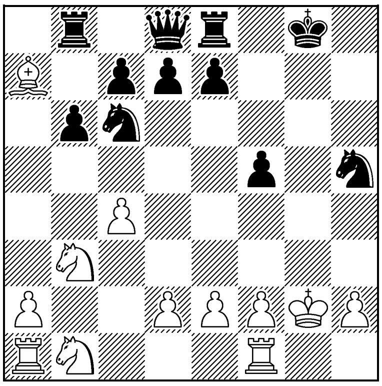
Open problem 52: Two-solutions proof game, where more than six pieces, as they stand on the diagram position, have a different identity per solution.

The known record of 6 pieces has been reach in problem **57**, where the 4 Rooks and the 2 black Knights have different identities. Another problem by Peter (R218, The Problemist 1993) shows almost the same content except that the original white Queen and a promoted one exchange their identities. It gives me the idea for the last challenge in this section:

Open problem 53: Two-solutions proof game, where the diagram position shows three pieces of the same type and color, with a cyclic change of their identities in the solutions.

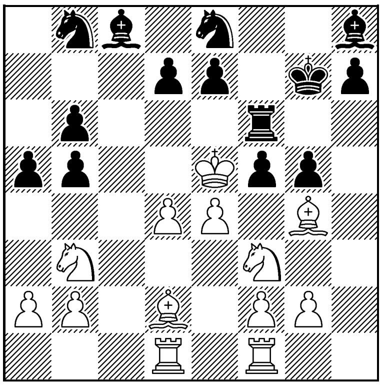
Obviously Knights and Rooks are the best candidates, as only one promoted piece is needed. The ultimate rendition would be a 3-solutions proof game with “full cycle” ABC-CAB-BCA, but it looks like an inaccessible dream – even asking for just one piece to have 3 different identities in 3 solutions would be very difficult to accomplish.

54
Mark Kirtley
15547 Die Schwalbe 2013



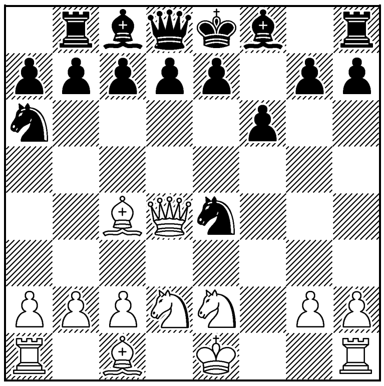
PG in 13.5 moves C+ 12+11
2 solutions

55
Peter Wong
R183 The Problemist 1990



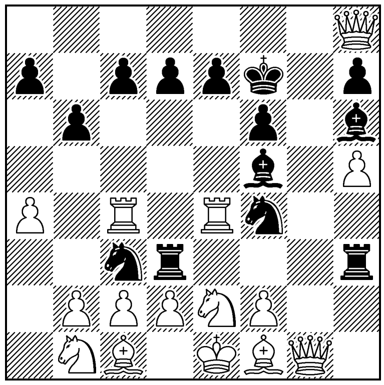
PG in 17.0 moves C+ 13+14
2 solutions

56
Gerd Wilts
R226 Probleemblad I 2004



a) PG in 7.5 moves C+ 13+16
b) PG in 12.0 moves

57
Peter Wong
7879 Die Schwalbe 1992



PG in 20.0 moves C+ 15+14
2 solutions

(54) a) 1.c4 Sf6 2.Qc2 Sh5 3.Q×h7 f5 4.Q×g7 B×g7 5.Sf3 B×b2 6.B×b2 Kf7 7.Bd4 Re8 8.B×a7 b6 9.Sd4 Bb7 10.Sb3 B×g2 11.B×g2 Kg8 12.Bc6 S×c6 13.0-0 Rb8 14.Kg2 – b) 1.c3 Sf6 2.Qc2 Sh5 3.Q×h7 f5 4.Q×g7 B×g7 5.c4 B×b2 6.B×b2 0-0 7.Bd4 Re8 8.B×a7 b6 9.Sf3 Bb7 10.Sd4 B×g2 11.Sb3 B×f1 12.K×f1 Sc6 13.Kg2 Rb8 14.Rf1. **(55)** a) 1.e4 a5 2.Qe2 Ra6 3.Q×a6 b5 4.Qb6 c×b6 5.Be2 Qc7 6.Bg4 Q×c2 7.Sf3 Qc7 8.0-0 Q×h2+ 9.K×h2 f5 10.Kg3 Sf6 11.Kf4 g5+ 12.Ke5 Bg7 13.d4 0-0 14.Sbd2 Bh8 15.Sb3 Kg7 16.Bd2 Se8 17.Rad1 Rf6 – b) 1.d4 a5 2.Qd3 Ra6 3.Q×a6 b5 4.Qb6 c×b6 5.Sd2 Qc7 6.Sb3 Q×h2 7.Bd2 Qc7 8.0-0-0 Q×c2+ 9.K×c2 g5 10.Kd3 Bg7 11.Ke4 Sf6+ 12.Ke5 0-0 13.e4 Bh8 14.Be2 Kg7 15.Bg4 Se8 16.Sf3 f5 17.Rhf1 Rf6. **(56)** a) 1.f4 Sa6 2.f5 Rb8 3.f6 S×f6 4.e4 S×e4 5.Bc4 S×d2 6.Se2 Se4 7.Qd4 f6 8.Sd2 – b) 1.f4 Sa6 2.f5 Rb8 3.f6 S×f6 4.e4 S×e4 5.d4 f6 6.Bd3 Kf7 7.Se2 Ke6 8.d5+ K×d5 9.Bb5+ Ke5 10.Qd4+ Ke6 11.Sd2 Kf7 12.Bc4+ Ke8. **(57)** a) 1.a4 Sc6 2.Ra3 Sd4 3.Rc3 S×e2 4.Rc4 Sc3 5.Qg4 Sf6 6.Q×g7 Rg8 7.Qh8 Rg3 8.Se2 Rd3 9.g4 b6 10.g5 Bb7 11.g6 Be4 12.g7 Sfd5 13.g8=Q f6 14.Qg1 Kf7 15.h4 Bh6 16.Q×d8 Bf5 17.Qh8 Rg8 18.h5 Rgg3 19.Rhh4 Rh3 20.Rhe4 Sf4 – b) 1.h4 Sc6 2.h5 Sd4 3.Rh4 S×e2 4.Rc4 Sf4 5.Qg4 Sf6 6.Q×g7 Rg8 7.Qh8 Rg3 8.Se2 Rh3 9.g4 b6 10.g5 Bb7 11.g6 Be4 12.g7 S6d5 13.g8=Q f6 14.Qg1 Kf7 15.a4 Bh6 16.Q×d8 Bf5 17.Qh8 Rg8 18.Ra3 Rgg3 19.Re3 Sc3 20.Ree4 Rd3.

Remaining tasks

The first challenge in this section concerns the Valladão theme. Remember that this theme asks for the 3 “special chess moves": promotion, castling and en-passant capture.

Open problem 54: Double Valladão with Ceriani-Frolkin promotions.

The double Valladão (i. e. two-sided) has been reached by Unto Heinonen, but the 2 promotions are visible on the diagram position. Thereafter Paul Raican showed more thematic content with fewer moves (problem **58**) – Paul’s problem contains an invisible promotion Sg1. The task is thus to improve those renditions such that promoted pieces are captured, thus forming the Ceriani-Frolkin theme. Note that an en-passant capture can't be motivated with the opponent's King still on its home-base. It implies that castling must appear before the en-passant capture of the other side.

The second challenge in this section also deals with the Valladão theme:

Open problem 55: One-sided Ceriani-Frolkin AUW where moreover the thematic side performs the Valladão theme.

This means that in addition to the AUW, the thematic side must also castle and perform an en-passant capture. This task (a variation of the Keym theme for proof games) has been achieved in the 2-sided setting (problem **59**).

The next challenge addresses "impostor" castling. The diagram position of the quite famous problem **60** shows home-squared thematic pieces Ke1e8 and Rh1h8, although both sides castled short in the game. Another impostor possibility, very attractive, is as follows:

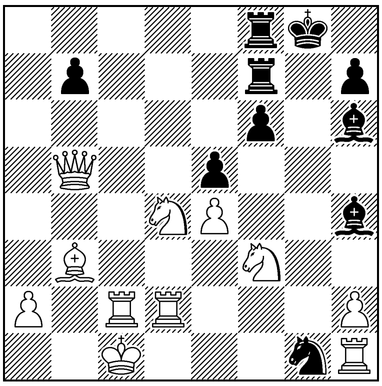
Open problem 56: The diagram position shows Kg1g8 and Rf1f8, although both sides castled long in the game.

Of course the other possibility with Kc1c8, Rd1d8 and short castlings, is also a valid task, as well as the "mixed case". The last challenge of this article is the following:

Open problem 57: A King visits each of the four corners.

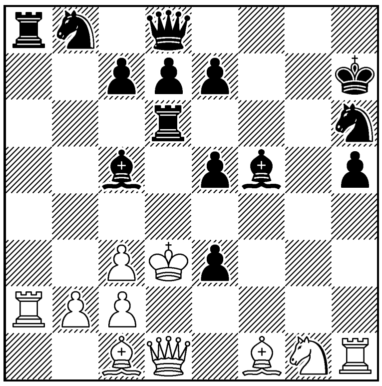
This stipulation needs no more explanation. It can be found in the book "Eigenartige Schachprobleme" by Werner Keym. The closest rendition I'm aware of, by Alexander Kisljak, is also in Werner's book, where the task is fulfilled but via a non-exact proof game (problem **61**). It means there are several solutions (duals) but of course each of them respects the theme. There is also a close exact attempt, where the thematic King visits 2 corners and travels near the 2 others (problem **62**).

58
Paul Raican
After Unto Heinonen
Best Problems 2007
Enzo Minerva JT45



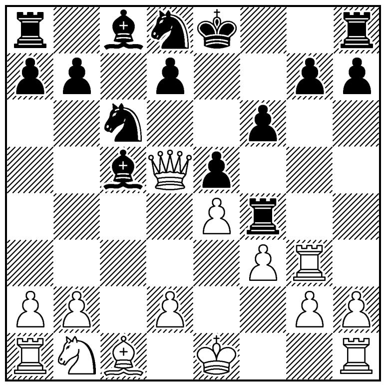
PG in 20.0 moves C+ 11+10

59
Kostas Prentos
Andrey Frolkin
13077 Die Schwalbe 2006
Dedicated to Werner Keym



PG in 26.0 moves C+ 10+14

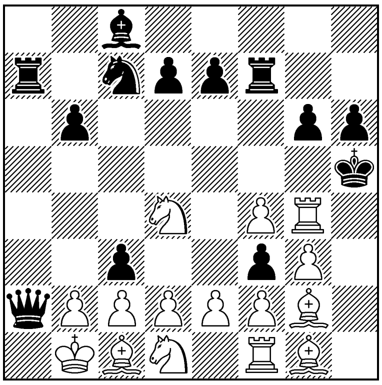
60
Andrey Frolkin
7053 Die Schwalbe 1990



PG in 19.0 moves C+ 14+15

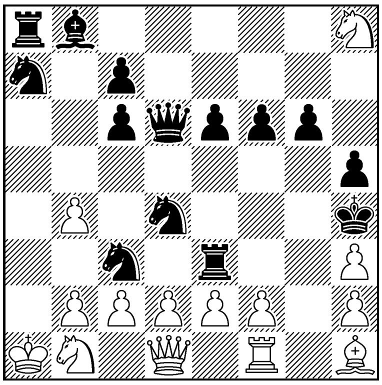
(58) 1.e4 e5 2.Qe2 Be7 3.Qb5 Bh4 4.Bc4 f6 5.B×g8 a5 6.Bb3 a4 7.c4 0-0 8.c5+ d5 9.c×d6 e.p.+ Rf7 10.d×c7 a3 11.c×b8=R a×b2 12.R×c8 b×c1=B 13.Rc2 Q×d2+ 14.S×d2 Rf8 15.Sdf3 Bh6 16.Sd4 g5 17.0-0-0 g4+ 18.f4 g×f3 e.p.+ 19.Rdd2 f×g2 20.Sgf3 g1=S. **(59)** 1.h4 a5 2.h5 a4 3.h6 a3 4.h×g7 h5 5.g4 Sh6 6.g8=B Bg7 7.g5 Bd4 8.g6 f6 9.Bd5 Bc5 10.Bc6 0-0 11.g7 Kh7 12.g8=R b×c6 13.Rg5 Ba6 14.Re5 f×e5 15.f4 Rf6 16.f5 Rd6 17.f6 Bc4 18.f7 B×a2 19.f8=Q Be6 20.Qf3 a2 21.Qd5 a×b1=S 22.Ra2 Sc3 23.d×c3 c×d5 24.Kd2 d4 25.Kd3 Bf5+ 26.e4 d×e3 e.p.+. **(60)** 1.e4 c5 2.Bd3 c4 3.Se2 c×d3 4.0-0 d×e2 5.c4 e1=R 6.c5 Re3 7.c6 Rf3 8.c7 Rf4 9.f3 e5 10.Kf2 Bc5+ 11.Ke1 Se7 12.Rh1 0-0 13.c×d8=R Sec6 14.Re8 Sd8 15.Re6 Sbc6 16.Rg6 f6 17.Rg3 Kf7 18.Qb3+ Ke8 19.Qd5 Rh8. **(61)** 1.a4 b6 2.a5 Sc6 3.a6 Sa5 4.Ra4 Sb7 5.a×b7 c5 6.b8=B f5 7.Bg3 Qc7 8.Bh4 Qg3 9.Rg4 g6 10.Sf3 f4 11.Sd4 f3 12.Sc3 Bh6 13.h×g3 Bf4 14.g×f4 Sf6 15.Bg3 Sd5 16.Bh2 Se3 17.g3 S×d1 18.Bg2 a5 19.0-0 a4 20.Kh1 a3

61
Alexander Kisljak
3587 feenschach 1982
Dedicated to A.G. Kuznetsov



(Inexact) PG in 44.0 moves C? 15+13

62
Michel Caillaud
3949 feenschach 1983



PG in 33.5 moves C? 14+14

21.Bg1 a2 22.Kh2 a1=Q 23.Kh3 Se3 24.Kh4 Rf8 25.Kg5 Rf5+ 26.Kh6 Qa2 27.Kg7 c4 28.Kh8 Kf7 29.Sd1 Kf6 30.Kg8 c3+ 31.Kf8 Qe6 32.Ke8 Kg7 33.Kd8 Kh6 34.Kc7 Ra7+ 35.Kb8 Rb7+ 36.Ka8 Rb8+ 37.Ka7 Rb7+ 38.Ka6 Sd5 39.Kb5 Kh5 40.Ka4 h6 41.Ka3 Rf7 42.Ka2 Sc7+ 43.Ka1 Ra7+ 44.Kb1 Qa2#. **(62)** 1.a3 b5 2.Ra2 b4 3.a×b4 Sc6 4.Ra6 Sd4 5.Rc6 d×c6 6.Sf3 Bh3 7.g×h3 h5 8.Bg2 Rh6 9.0-0 Re6 10.Bh1 Re3 11.Kg2 e6 12.Kg3 Bc5 13.Kf4 Qd6+ 14.Kg5 f6+ 15.Kg6 a5 16.Kh7 Kf7 17.Kh8 Kg6 18.Se5+ Kg5 19.Sd7 g6 20.Kg7 Ba7 21.Kf7 Bb8 22.Ke8 a4 23.Kd8 a3 24.Kc8 Se7+ 25.Kb7 Sc8 26.Se5 Sa7 27.Ka6 a2 28.Ka5 a1=S 29.Ka4 Sab3 30.Ka3 Kh4 31.Ka2 S×c1+ 32.Ka1 Sa2 33.Sf7 Sc3 34.Sh8.

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